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ELECTRICAL WORLD

News Issue

SEPTEMBER 4, 1948

A McGRAW-HILL PUBLICATION

C. Hamilton Moses, Arkansas Power & Light President, Tells the Arkansas Story to Underwriters at New York City

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look what's happened to...

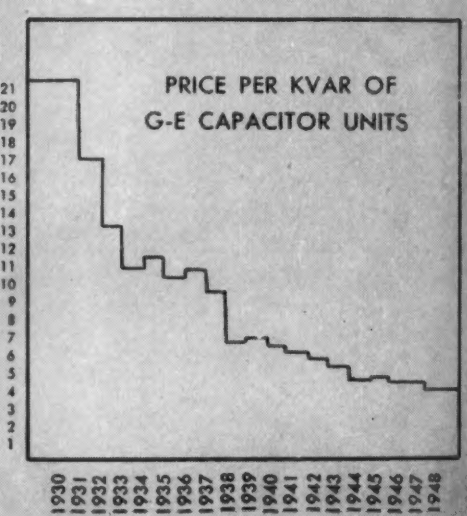
your capacitor dollar!

It Buys 4 Times as Much as in 1930

Capacitor units were $21 a kilovar in 1930. Even at that price—and at that time—they opened up an attractive, low-cost way to release system capacity.

Today, capacitors are less than $5 a kilovar! In terms of dollars per kilowatt released, they are one of the most attractive investments you can make.

Behind this remarkable cost reduction, you see the familiar American cycle—mass production, lower prices and swelling demand. But that is not all. You see a continuing series of brilliant design accomplishments, as shown at the right. These advances accelerated the cost-reduction cycle to the point where you now get four capacitors for the price of one in 1930.



The steady drop in G-E capacitor prices has gone hand in hand with a greatly expanding use of capacitors, and with the following major improvements in design that have made the capacitor one of the most dependable types of electric equipment available today:

1930 G.E. introduced *thin* kraft paper, making possible in

1930 The first oil-filled, 10-kvar individual unit.

1931 G-E introduced Pyranol, which so reduced size and weight that in

1932 G.E. introduced the first 15-kvar unit.

1937 The first outdoor individual unit for distribution circuits, introduced by G.E.

1947 G.E. introduced the permanent hermetically-sealed glass bushing.

1947 The first 25-kvar unit introduced by G.E. made possible by new, improved kraft paper.

1948 G.E. introduced the first 3-kva, 240-volt capacitor for secondary house feeder lines of distribution transformers.

It Means You Can Release System Capacity for as Little as $20 a Kilowatt

Yes, $20 a kilowatt! That is why—with costs up, dollars scarce and power reserves low—more and more utilities are putting capacitor installation high on the job list of their busy line crews.

What's more, your capacitor dollars can release kilowatts *quickly*—in a matter of a few weeks or less. For more information—or for the assistance of a G-E application engineer, contact your G-E sales representative. He is ready to give you quick help and short shipment. Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

Vol. 130 No. 10

NEWS
OF THE ELECTRICAL WORLD

The Electrical Week

Rapid expansion of power systems has brought to the fore many technical problems. AIEE is right on the job seeking a solution, devoting much time to them at Pacific general meeting at Spokane . . . New credit rules governing sale of appliances are very mild and are not expected to reduce sales . . . The heat came to New York last week and disrupted operations at Con Ed's Waterside Station. One generator after another went off the line . . . Minnesota distribution co-ops are getting unhappy about the prices they must pay generation co-ops for energy. Their protests may bring repercussions in Congress . . . Take a look at the output chart on page 19 because output last week reached a record high of 5,477,741,000 kwhr; and if you are worried about the future, Arput has some advice for you.

Utilities will soon be able to get "walkie-talkies." FCC rules governing their use are expected to become effective Oct 1 or shortly after. Quantity production of the instruments is expected to follow.

To encourage the investment of new capital in electric companies, the Italian government has authorized utilities to increase their pre-war rates 24 times. They have been only 18 times as high. This definitely is not an American idea.

No specific industry will get a blanket deferment for its men under the new draft regulations. What each man does will determine whether or not he is called.

Communistic influences in the United Electrical Workers will come under the prying eyes of the House Labor subcommittee investigating Communism in trade unions. Chairman Kersten, Wisconsin Republican, planned to get the investigation under way this week.

Electric Bond & Share began September with a new director, T. C. Wescott, who succeeds the late C. E. Groesbeck. Lester Ginsburg, treasurer, has been advanced to a vice-presidency. Secretary H. H. Dinkins, Jr, has resigned to go into business. And B. M. Betsch has taken over the work formerly handled by Ginsburg and Dinkins.

Alan Johnstone, former Federal Works Administration general counsel and public power advocate, ran a poor third in South Carolina's recent Democratic senatorial primary. Incumbent Senator Maybank won, assuring his re-election. Johnstone campaigned for expansion of the S. C. Public Service Authority, state agency which operates the Santee-Cooper hydro project.

With September here, utilities along the Atlantic seaboard can look forward without pleasure to the hurricane season.

National Industrial Conference Board reports that by the end of this year individual taxpayers will have paid almost $125,000,000,000 in direct taxes since the war began. In 1947 alone, NICB says, individual taxpayers spent more on direct personal taxes than they did on all the following items: new homes, new cars, new furniture, religious and charitable purposes, private education, medical care, and death expenses.

Though 16 of the 26 commercial television stations now in operation are in the East, the level states of the Midwest offer a better future for television receiver owners. The absence of mountains and high buildings should provide clearer reception over a larger area.

The United States Chamber of Commerce has issued a "guide against depression." The booklet advises businessmen to take advance action and watch for "danger signals and storm warnings" to prevent another cycle of boom-bust.

Interpret this as you will. Senator Magnuson, Washington Democrat, has protested against possible use of any power or reclamation revenues for Columbia River flood relief. "Flood relief measures taken against the terrible damage in the Columbia Basin should stand on their own just the same as in any other part of the country."

AIEE Studies Problems Evolving from Expansion of Power Systems

TECHNICAL PROBLEMS evolving from rapid expansion of power systems dominated the Pacific general meeting, AIEE, held at Spokane, Wash., Aug 24-27.

Factors influencing the most economic solution to the problems of high-voltage, long-distance transmission were the subject of much discussion. Reports of developments abroad indicated the practicability of transmission at 400 kv. Research here and abroad is being conducted on both expanded single conductors and multiple conductor cables as a solution to the corona problem. Studies of the problem of transmitting large blocks of federally developed Columbia River power over long distances have not yet led to a definite conclusion as to the most economical voltage to employ.

Ring Bus Is Coulee Solution

A 230-kv solid ring bus was shown to be the most economical solution to the problem of handling the ultimate capacity of 2,300,000 kw at Grand Coulee in a paper by N. G. Holmdahl and C. L. Kilgore, Bureau of Reclamation. This would provide required flexibility, simplicity of operation, ease of maintenance, maximum stability, and simplicity of relaying.

Overall efficiency of hydraulic units used for both generation and pumping can be greatly increased by use of a pump runner instead of a conventional turbine runner, said W. J. Rheingans, Allis-Chalmers Manufacturing Co. Efficiencies approaching 85% for overall operation make the use of pump storage plants much more attractive. Such plants would pump water back into storage during off-peak hours using surplus hydro energy from uncontrolled storage plants elsewhere on the system.

Fault Locators Discussed

Two papers dealt with transmission line fault locators. The Hydro-Electric Commission of Ontario reported successful use of an echo-ranging or pulse reflection type fault locator on both de-energized and energized lines. On energized lines, short bursts of radio frequency signals are applied to the line through coupling capacitors. Travel time to and from the fault is measured on a cathode ray oscilloscope record. From this, distance to the fault is scaled in miles. First operation has given no apparent interference with carrier channels on the lines.

The Bonneville Power Administration described two different types of fault locators using fault generated surges as distinguished from transmitter generated pulses. In one type, a recording device at one end of the line is triggered by the first surge from the fault. Length of time for the surge to travel to and from the fault is shown on a photographic record of an oscilloscope trace. From this, distance to the fault may be calibrated.

In the other type, a timing device is located at one end of the line and a triggering device for radio or other communication link at the other. Length of time for a surge to travel to opposite ends of the line is compared through the communication link on an electronic counter. This difference in time gives distance to the fault in miles.

Discussion brought out some objections to all three methods. The suggestion was made that an inexpensive radio transmitter located on each tower might prove the best solution. A coded signal would be sent out by the transmitter when triggered off by a fault.

Two papers dealt with telemetering problems. One described a universal telemetering scheme employing frequency as a translation medium. Quantities to be telemetered are converted into equivalent d-c voltage. In a simple tube circuit this d-c is translated into equivalent frequency for transmission. Channel may be carrier, wire, or radio link. A tube receiver translates frequency back into d-c proportional to the quantity being telemetered. Simplicity, universality and accuracy within 0.5% are features of the system explained by the speaker.

Institute president, Everett S. Lee, urged engineers to put themselves forward to gain recognition in community and civic affairs, making addresses before two civic groups while in Spokane. The 1949 Pacific general meeting is to be held in San Francisco.

POLES ARE UNNECESSARY is the erroneous impression one can draw from this accident. When a motorist removed a section of this 40-ft (Class 3) pole at Greenfield, Mass., service was uninterrupted. The top, including the three 10-kva, 452-lb transformers, was suspended by three primaries, six secondaries, a street light wire, and a guy. It took Western Massachusetts Electric crews 16 hours to make complete repairs

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Jurisdictional Dispute of AFL Unions Settled

Jurisdictional rights of three unions in the handling of steel decking has been clarified in one of the first two decisions handed down by the National Joint Board for the settlement of jurisdictional disputes in the construction industry. Both decisions were unanimous, with the representatives of the industry and two of the AFL Building Trades Department joining with impartial chairman, John T. Dunlop.

In the steel decking dispute, involving the Sheet Metal and Iron Workers unions, IBEW intervened to protect its interest and got recognition of its jurisdiction over the electrical work whenever steel decking is used as a raceway for electrical wiring.

The expected decision on IBEW's differences with the plumbers over preheating and stress relieving of welds on high-pressure pipe has been held up because of a question raised about the procedure followed in the case.

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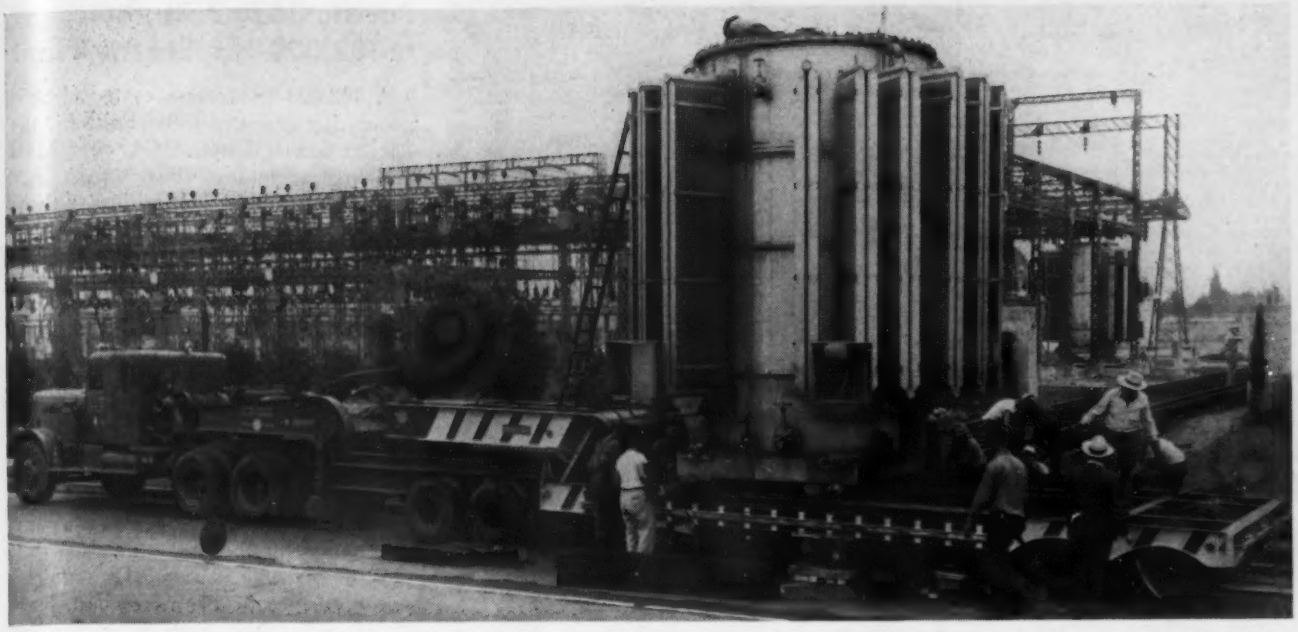
Missouri P&L Will Buy Gasconade Power Co

The Missouri Power & Light Co, Jefferson City, serving much of central Missouri, has been authorized by the Public Service Commission to purchase the Gasconade Power Co, Hermann, Mo., for $800,000, plus interest of $85,280.

Funds for the purchase will be provided by a $2,000,000 sale of 100,000 shares of Missouri Power stock. Gasconade serves 19 communities in Gasconade, Franklin, Osage, Maries, and Montgomery Counties, adjoining the area served by Missouri Power.



ONE OF SEVEN 20,000-kva transformers involved in a transfer of facilities of the Los Angeles Bureau of Power & Light is loaded on a trailer. The transfer was necessitated by the installation of a new condenser at the Venice Boulevard substation, making its four transformers unsuitable. They were traded for three others at a substation 12 miles away. Two skids were fitted to the top of each transformer to enable it to pass under overhanging wires without danger. The specially built trailers have a capacity of 110 tons.

Credit Rules for Appliances Mild; Little Effect on Turnover Expected

PRACTICALLY ALL household equipment sold by electrical appliance dealers comes under consumer credit restrictions effective Sept 20. But the new Regulation W, issued Aug 17 by the Federal Reserve Board, is so mild that it is expected to have little effect on turnover of any but the most expensive appliances.

As authorized by the recent special session of Congress, the sweeping powers over consumer credit handed to FRB now are due to expire next June 30. The possibility that the next Congress might not renew this authority may have influenced the Board in watering down the strict procedures provided in war-time credit restrictions.

The new regulations cover installment buying of, and credit loans for, the following items in the household appliance field:

1. Stoves, dishwashers, ironers, refrigerators of less than 12 cu ft capacity, washing machines, and combinations including one or more such appliances.
2. Room unit air conditioners.
3. Radio and television receivers, phonographs, and combinations.
4. Sewing machines.
5. Vacuum cleaners.

Extensions of credit for these items totaling between $50 and $5,000 must be accompanied by down payments of at least 20%. Payment periods may run for 15 months on credits of $1,000 or less, for 18 months on charges over $1,000. The same restrictions also apply to credits for furniture, including lamps and floor coverings.

Dealers who extend credit must file registration statements with the nearest Federal Reserve Bank or branch within 60 days. Registration forms will be supplied by the banks. The dealers also must keep records of installment sales, including identification of the article sold, cash price, amount of down payment, finance charge, balance due, and terms of payment.

Each dealer extending credit for the items covered is automatically licensed by FRB. First penalty provided for violation or evasion of the regulation is withdrawal or suspension of license. The Board also has authority to institute court proceedings, both civil and criminal.

FRB has under consideration only two changes in the present Regulation W. It may extend controls to credit for home repairs and remodeling. And it may put additional teeth in its enforcement provisions by declaring unenforceable any sale contracts in violation of Regulation W. It will accept formal protests on the proposed changes until Sept 20.

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Kellems Co Will Move Factory From Westport

The Kellems Co, which manufactures wire cable grips, will move from Westport, Conn., but where, Miss Vivien Kellems, its head, won't say. The decision to move followed a ruling last week by the Court of Common Pleas of Fairfield County, which ordered her to close the factory by Dec 1 or pay a fine of $5,000.

The Westport Zoning Commission has contended that the factory is in a zone set aside for business. They classify the factory as light industry.

ELECTRICAL WORLD, Published weekly by McGraw-Hill Publishing Company, Inc. Publication Office, 99-129 North Broadway, Albany 1, N. Y. Editorial and Executive Offices, 330 West 42nd St, New York 18, N. Y. James H. McGraw (1860-1948), Founder; James H. McGraw, Jr, President; Curtis W. McGraw, Vice-President and Treasurer; Eugene Duffield, Executive Assistant for Publications; Nelson Bond, Director of Advertising; Joseph A. Gerardi, Secretary; J. E. Blackburn, Jr., Director of Circulation. Subscription rates: Single copy 35 cents. In the United States, $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money at par.) Pan-American countries, $15 for one year, $25 for two years, $30 for three years. All other countries $20 for one year, $30 for two years, $40 for three years. Entered as second class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U. S. A. **Copyright 1948, by McGraw-Hill Publishing Company, Inc. All Rights Reserved.** **Cable address McGRAW-HILL, New York. Member A.B.P. Member A.B.C.**

Changes in Capacity Reported to Federal Power Commission

PLANT ADDITIONS DURING JULY

Utility	Plant	Fuel	Capacity (Kw)
Vinalhaven Light & Power Co	Vinalhaven, Me.	IC	168
Ford City Boro Electric Light Plant	Ford City, Pa.	IC	1,125
Dayton Power & Light Co	O. H. Hutchings	S	60,000
Warren Municipal Water & Light Co	Warren, Ind.	IC	473
Municipal Electric Lighting & Power Dept	Richmond, Ind.	S	15,000
Charlevoix Municipal Utilities	Charlevoix, Mich.	IC	1,000
Presque Isle County Electric Co-op	Atlanta, Mich.	IC	320
Madelia Municipal Light & Power Plant	Madelia, Minn.	IC	980
Sleepy Eye Municipal Utilities	Sleepy Eye, Minn.	S	2,000
Austin Water, Electric, Gas & Power	Austin, Minn.	S	7,500
Missouri Power & Light Co	Moberly	IC	2,000
Missouri Power & Light Co	Montgomery City	IC	1,000
Memphis Municipal Light Plant	Memphis, Mo.	IC	360
Paris Light, Water & Ice Dept	Paris, Mo.	IC	300
Chambers Light & Power Co	Chambers, Neb.	IC	100
Imperial Light & Water Plant	Imperial, Neb.	IC	473
Oakley Municipal Plant	Oakley, Kan.	IC	415
Western Light & Telephone Co	Plainville, Kan.	IC	1,136
Georgia Power & Light Co	Bainbridge	IC	2,000
Tampa Electric Co	Hookers Point, Fla.	S	30,000
Kentucky Utilities Co	Tyrone	S	25,000
Central Louisiana Electric Co	St. Landry	S	15,000
Newkirk Power & Light Dept	Newkirk, Okla.	IC	525
Denton Water & Light Dept	Denton, Texas	IC	2,250
Floydada Electric Dept	Floydada, Texas	IC	540
Texas Electric Service Co	Permian Basin	S	12,500
Southwestern Public Service Co	Riverview	S	30,000
West Texas Utilities Co	Abilene	S	8,000
Central Arizona Light & Power Co	Phoenix	S	30,000
Murray City Power Plant Corp	Murray City, Utah	IC	2,090
Bureau of Reclamation	Shasta Dam, Calif.	H	75,000

PLANT RETIREMENTS DURING JULY

Wisconsin Power & Light Co	Bellville	H	100
Willmar Water & Light Dept	Willmar, Minn.	S	280
Paris Light, Water & Ice Dept	Paris, Mo.	IC	72
Imperial Light & Water Plant	Imperial, Neb.	IC	120
Oakley Electric Light Dept	Oakley, Kan.	IC	137
Georgia Power & Light Co	Waycross	S	1,000
Lexington Electric Dept	Lexington, Tenn.	IC	100
Chugwater Electric Dept	Chugwater, Wyo.	IC	112
Sierra Electric Cooperative, Inc	Hillsboro, N. M.	IC	120
Palo Alto Electric Dept	Palo Alto, Calif.	IC	1,200

H—Hydro, IC—Internal Combustion, S—Steam
United States Capacity as of Aug 1—Steam, 37,366,904 kw; Hydro, 15,433,099 kw; Internal Combustion, 1,493,202 kw; Total, 54,293,205 kw.

Injunction Considered in Walkout at Oak Ridge

Federal Judge George C. Taylor, following a hearing at Knoxville, Tenn., took under advisement a request of the National Labor Relations Board for an injunction to end a strike and secondary boycott of 100 utility line and trouble men at Oak Ridge.

Members of IBEW walked off their jobs July 30, leaving the atomic production center without electric utility maintenance service, after Roane-Anderson Co had let a subcontract for a school lighting system job to Kiser Electric Co of Knoxville, which does not employ union labor.

Roane-Anderson, operator of Oak Ridge utilities under contract with the Atomic Energy Commission, charged that the union struck in violation of contract. The union contended that there is no strike, that the men individually and voluntarily left their jobs.

A week-old strike of 3,300 AFL construction workers at Los Alamos, N. M., another atomic installation, ended after a construction company which brought its own non-union workers from Oklahoma and Texas agreed to hire New Mexico labor.

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Kitsap PUD Negotiating for Puget Sound District

The Kitsap PUD of Bremerton, Wash., is negotiating with the Puget Sound Power & Light Co for the company's properties in Kitsap County, C. Jack Jones, PUD president, has disclosed.

Power company executives have indicated their willingness to sell at a fair purchase price, but no price has yet been agreed on, Jones said. Guy C. Meyers of New York is the PUD's fiscal agent.

A physical inventory of distribution lines, substations, trucks, buildings and other facilities has been completed and submitted for inspection of the PUD commission.

"The Kitsap County property is among the most profitable in the entire Puget Sound system," Jones said. Gross revenue last year was more than $2,000,000 with a gross operating expense of $1,200,000.

Pacific G&E Will Build 402,000-Hp Steam Plant

A 402,000-hp steam-operated electric generating plant will be built by the Pacific Gas & Electric Co, near Moss Landing on Monterey Bay, Calif.

The new power plant will have three 134,000-hp generators. The power will be fed through new 220-kv and 110-kv transmission circuits into the PG&E network for northern California cities.

Four oil storage tanks with a total capacity of 480,000 bbl will provide fuel. Provision is also to be made to use natural gas to fire the boilers, and coal will be stored as an alternate fuel.

The first generating unit is scheduled to go into service early in 1950 with the other two planned for operation a year later.

A 280-acre site was recently acquired by the company. The new plant, largest in the PG&E system, is part of PG&E's $400,000,000 expansion program.

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AFL Union Rejected by Anaconda Workers

Employees of the Anaconda Wire & Cable Co plant at Hastings-on-Hudson, N. Y., have rejected Local 3, International Brotherhood of Electrical Workers, AFL, as their bargaining agent by a vote of 435 to 237.

Formerly the workers were represented by Local 404, United Electrical, Radio & Machine Workers, CIO, whose contract expired June 7. Local 404 recently left the International because "the International officers refused to sign anti-Communist affidavits in compliance with the Taft-Hartley Act." Which union, if any, will represent the Anaconda workers is still in doubt.

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Rejection Likely on PUD Bid for Utility Properties

The Grays Harbor Public Utility District at Aberdeen, Wash., has voted to offer the Puget Sound Power & Light Co $1,024,000 for its properties in the county, but Puget Power acceptance is unlikely. The offer is $76,000 less than the figure for which the company proposed to sell the properties recently. It is effective through Oct 15 but Puget Power is expected to act shortly after Sept 1 when President Frank McLaughlin returns to his office in Seattle.

The PUD action countermands a resolution it passed last May, under which condemnation proceedings would have been started.

St. Lawrence Project Attracts Second Bidder

A New Jersey promoter has put in a bid to build the St. Lawrence Seaway—navigation works, power plants, and all. But plans of the State of New York and Province of Ontario to develop St. Lawrence power probably will freeze him out.

Federal Power Commission last week (Aug 27) set hearings to start Oct 4 on the New York Power Authority's application to construct power facilities on the U. S. side of the International Rapids site. Meanwhile, Ontario's Hydro-Electric Power Commission, as joint developer, is moving for Canadian approval of its share of the project. Both bodies also have asked for the approval of the International Joint Commission, a body set up by U. S.-Canadian treaty to watchdog St. Lawrence development.

Application of the Public Power & Water Corp of New Jersey, a new company, to construct the seaway reached FPC last week (Aug 23). The Commission announced it would process the new application in the same manner it had handled the NYPA bid—advertising the application, allowing a month for protests and comments, then holding hearings if the proposal is still eligible.

Approval of the NYPA bid in the interim, of course, would rule out further consideration of the new application.

Trenton Man Heads Firm

President of the Public Power & Water Corp is Hugo A. Spalinski, Trenton engineer. Spalinski proposes to construct the entire project according to plans drafted by the Army Corps of Engineers. NYPA and the Ontario Commission would follow Army plans for power work, building only such channels as necessary to avert conflict with possible future navigation development.

Spalinski estimated the cost of his proposal at some $415,000,000. He would finance the job by floating $275,000,000 in bonds and selling $100,000,000 of preferred stock and $50,000,000 of common. He also would sell 1,000,000 shares of no par value common.

None of Spalinski's previous hydroelectric projects has proceeded beyond the paper stage. The most recent was a complex development on the Delaware River.

Hearings on the NYPA application will be held in Washington. Though there was no serious protest, FPC decided the project was of "such widespread interest" as to merit formal airing.

E. S. LEE, left, national president of the American Institute of Electrical Engineers, congratulates H. R. Hughes, chairman of the Richland, Wash., Section of the Institute

Richland, Wash., Section Formed, Aug. 23, by AIEE

The American Institute of Electrical Engineers has formed a section at Richland, Wash. This is the first section to be established in the Northwest since 1939. The majority of the 70 charter members are connected with the operations of the Hanford project of the Atomic Energy Commission.

Preceding the inaugural dinner on Aug 23, a small party of AIEE officers and members were taken on a conducted tour of construction areas of the Hanford Works. Following the dinner, section officers were installed by O. W. Hurd, vice-president of the Ninth District of the Institute.

Officers of the section are H. R. Hughes, chairman; W. J. Dowis, vice-chairman; and J. H. Hemperly, secretary-treasurer.

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Washer First Appliance Choice of Farmer's Wife

Cleanliness is second to nothing to the farmer's wife when she is picking her electrical applicances.

According to recently announced results of a Bureau of Agricultural Economics survey, about 43% of all U. S. farms have an electric washing machine. Next most popular appliances, the survey shows, are refrigerators, which are on 38% of the farms; electric water systems, on 27%; vacuum cleaners, 25%; ranges, 12%; water heaters, 10%; sewing machines, 7%.

The survey covered only a selected list of appliances used generally in city homes. BAE obtained data from some 8,400 farmers.

Other interesting results of the poll showed that the Pacific Coast states have the largest proportion of farms with electric appliances. Washers are most popular in all areas except the South Atlantic and East South Central states, where refrigerators take the lead. Electric ranges are most popular on the Pacific Coast, though about one-third of the farms in Michigan and Ohio have them.

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Kansas Co-op to Install Diesel Generating Unit

Central Kansas Electric Cooperative Association will install a new 1,160-kw diesel generating unit in its Great Bend, Kan., plant. The addition will be financed with part of a $1,260,000 loan from the Rural Electrification Administration—only generating loan approved by REA in recent weeks.

The Great Bend plant already contains two 1,000-kw diesel units. The co-op also has a contract with Kansas Power & Light Co for supply of 1,000 kw of standby energy. It obtained the REA grant on a showing of need for additional power to serve present and prospective consumers on its distribution system.

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Consulting Office Opened

Glenn R. Swindell has formed the Swindell Engineering Co at Main and Cedar Sts., Poplar Bluff, Mo. The firm offers an electrical engineering and consulting service for rural and municipal electric systems.

Operations at Consolidated Edison New York Plant Disrupted by Heat

THE HEAT WAVE which struck New York last week and sent the mercury to a record 100.8 degrees left its effects on Consolidated Edison Co and more directly on its customers.

At Waterside Station, along the East River, a series of cable failures in the generator leads put 3 units out of service in one 24-hour period. While the cause of the failures has not been determined, it is believed that high temperatures were a factor.

The first cable failure occurred at 8:17 PM, Aug 26, in a lead from a 65,000-kw, high-pressure turbo-generator. At 5:33 AM Aug 27, the unit went back into service, but was limited in capacity. This dropped the station's normal capacity to 470,000 kw. The normal 505,000-kw capacity is based on the use of tie lines with other Consolidated Edison generating stations and the use of frequency changers connected with the 25-cycle side of the Waterside Station as well as 60-cycle generating units in the station.

Reduced Consumption Asked

At 11:09 AM, Aug 27, when the station load was 403,000 kw, another lead failed and put a 53,000-kw unit out of service. The Sales Department immediately began calling major customers in the area served by the station requesting them to reduce consumption by 20%.

By 3 PM, station load had fallen to 357,000 kw, compared with a station capacity of 417,000 kw. At 3:05 PM, a third lead failed on another 65,000-kw, high-pressure turbo-generator. The resulting lack of steam caused a 40,000-kw, low-pressure generator to be taken off the line shortly thereafter.

One Unit Out for Overhaul

In all, there are four high-pressure topping units and one low-pressure condensing unit on the 60-cycle side at the Waterside station. One 53,000-kw, high-pressure unit was down for overhaul at the time of the failures. Following the breakdowns, the 60-cycle supply to the bus was only from the limited high-pressure unit which had been repaired during the night, the frequency changers and the tie-lines.

In order to keep the load within the limits of the capacity of Waterside, it was necessary to drop the Cooper Square network, serving about 3 sq mi, in the lower East Side of Manhattan. This network, cut off at 3:06 PM, was selected because demand here approximated the required reduction in load. During the outage, d-c supply in the area was not affected as this is supplied from the 25-cycle side of the system.

By 5:01 PM, the 53,000-kw unit which had failed in the morning and the 40,000-kw, low-pressure unit were back on the line. Service was restored to the Cooper Square network. Full service for all Waterside customers was restored at 5:30 PM. By Monday morning, Aug 30, all units were back in operation except the one that was being overhauled.

Consolidated Edison was not the only utility in New York in trouble. On the evening of Aug 26, a short circuit occurred in one of the power plants owned by the city's Board of Transportation. This station serves two of the city's subway lines. When this station went off the line, an increased load was put on another station. The overload put a unit out of service. Subway travel on the affected lines was halted for nearly two hours.

In the Summit, N. J., area served by the Jersey Central Power & Light Co, some 7,000 customers were without power for about 4 hours, Aug 26. The outage was due to two breaks in a 13.2 kv aerial cable loop circuit. Both failures were traceable to the heat. The aerial cable involved was varnished cambric insulated, lead-covered, steel armored. Heat expanded the steel armor wire bound spirally around the cable. The resulting twisting action broke the cable at joints, letting the cable fall.

The cable involved in both failures was old-type aerial cable which had been in service an estimated 18 years.

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San Diego Gas & Electric Installs 50,000-Kw. Unit

San Diego (Calif.) Gas & Electric Co has completed installation of a 50,000-kw turbo-generator at its Silver Gate plant at an approximate cost of $6,250,000. This brings the utility's total electric capacity to 254,000 kw and removes last year's threat of a power shortage during peak demands.

Another generator similar to the one recently installed has been ordered for 1950 and advance construction has been started. It is budgeted at $8,000,000 because of rising costs since the latest unit was contracted for. Plans for a third generator are in the preliminary stage with installation date undecided.

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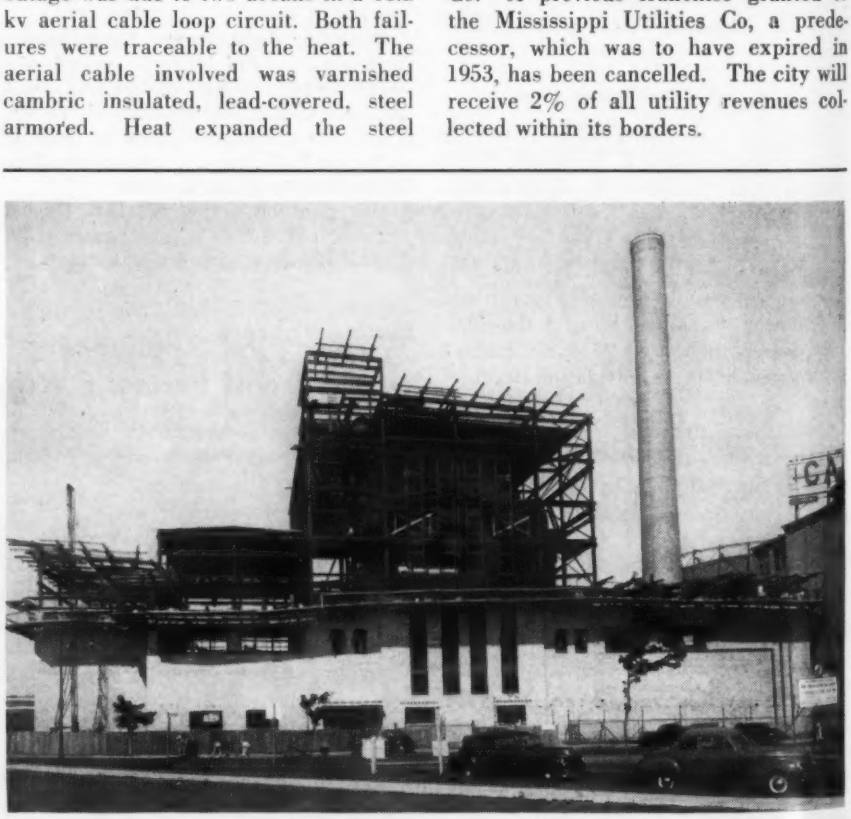
Gets 25-Year Franchise

Lumberton, Miss., has granted a 25-year franchise to the Mississippi Power Co. A previous franchise granted to the Mississippi Utilities Co, a predecessor, which was to have expired in 1953, has been cancelled. The city will receive 2% of all utility revenues collected within its borders.



MORE POWER FOR CAMBRIDGE, MASS., will come from this Kendall Square Plant of the Cambridge Electric Light Co. The first unit will be 20,000 kw. A second unit of 25,000 kw is planned. Architectural design accords with beautiful locale

Rates at Minnesota Co-op Plants Called Too High

Rural Electrification Administration may reap a tempest of protest for the generating loans it planted in Minnesota and neighboring states in recent years (See *In the Industry*, Page 20, this issue).

Dissatisfaction with the cost of energy produced at REA-financed generating plants apparently is mounting among distribution cooperatives, which also have federal loans. This sentiment is revealed in a special study, signed by five distribution co-op leaders. Their report concludes that the cost of energy produced by three generating co-ops "has exceeded the price at which energy could have been purchased by 30%."

The survey was completed last May. But its findings were not generally known until reported recently in the *Minnesota Farm Bureau News*, the statewide paper of the farm organization.

Those Who Signed Report

Distribution co-op officers predominated on the seven-man committee which signed the report. They were Irving J. Clinton, manager, Meeker Cooperative Light & Power Association, Litchfield, Minn.; Elmer Jacobson, president, and George W. Bleecker, manager, Goodhue County Cooperative Electric Association, Zumbrota, Minn.; and Harold A. Van Slyke, president, and C. H. Gelder, manager, Dakota County Electric Cooperative, Farmington, Minn. Other signers of the report were Lee M. Nelson, secretary of the Minnesota Municipal Utilities Association, and Thomas C. Wright, president, Otter Tail Power Co, who also is president of the North Central Electric Association.

REA spokesmen in Washington refused to comment, except to admit knowledge of the report's existence. It is expected that the generating co-ops involved will shortly make formal reply, however.

REA probably is not underestimating the possible effects of the document. If it gets to Congress, as seems likely, it may stir new interest in proposals to limit the agency's authority to grant loans for purchase or construction of generating plants. Such legislation was dormant this year, but the next session of Congress is almost certain to see its revival.

One of the most potent arguments against loan restrictions in the past has been REA's avowed policy of discouraging such loans. In effect, Administrator Wickard told Congressional groups that generating loans were made only where (1) no other power source was available, or (2) where a generating co-op could produce energy more cheaply that it could be purchased.

A KITCHEN IS NO PLACE for a distribution pole; so the new owner of this house asked the Consumers Power Co, Muskegon, Mich., to remove it. The astounded utility officials agreed. They had placed the pole originally behind the house whose owner kept adding to it without informing the utility. The pole was removed in sections

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2 Franchises Renewed

Two Iowa cities have renewed franchises of the Iowa Public Service Co. Citizens of Bode and Holstein recently voted 25-year extensions by overwhelming majorities.

Halsey, Stuart Offering Arkansas P&L Bonds

(See Front Cover)

Halsey, Stuart & Co, Inc, New York, are offering to the public $7,500,000 of first mortgage bonds which it purchased last week. The 3⅛% bonds, due Aug. 1, 1978, are being offered at $101.07 to yield about 3.07%. The purchase price by the group headed by Halsey, Stuart was $100.5811.

President C. Hamilton Moses and a group of Arkansas Power & Light Co officials came to New York to attend a meeting with prospective bidders on the bonds. In his talk to the group, President Moses stressed the "Arkansas story." He emphasized the great growth in industry made by the state and its many advantages.

The utility is cooperating with the Middle South Development program, which is being sponsored by AP&L, Louisiana Power & Light Co, Mississippi Power & Light Co, and New Orleans Public Service, Inc. All companies are interconnected.

Proceeds of the bonds will be used to further the company's $88,000,000 construction program. In 1948, the company will spend about $13,150,000. Nearly this entire amount will be for transmission and distribution systems.

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REA Borrowers in May Set Connection Record

More farms and other rural establishments were connected to REA-financed power lines in May than in any previous month in the 13-year history of the rural electrification program.

In making this announcement, the Rural Electrification Administration added that during the same month borrowers energized 14,129 miles of line, the highest figure since the construction peak before the war.

During May, 51,356 rural consumers were added to REA-financed lines. This was approximately 5,000 more than in December 1939, the previous peak month. As of May 31, REA borrowers were operating 652,376 miles of line and were serving 2,220,788 consumers.

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Adds Power for Aluminum

A few million extra pounds of badly needed pig aluminum will result from the Bonneville Power Administration's extension of additional power to the Aluminum Co of America, Reynolds Metals Co, and Permanente Metal Co. Continuance of favorable water conditions made the change possible.

SEC RULINGS

MIDDLE WEST CORP's application for permission to sell its interest in United Public Service Corp to the Chicago investment banking firm of Doyle, O'Connor & Co, has been denied. The commission's decision was based in part upon the fact that Doyle's purchase of the United stock was conditioned upon its exemption as a holding company, which would result "in a shift of control of the liquidation process from a registered holding company to a controlling group specifically exempted from the provisions of the act which we cannot consider appropriate at this state of the liquidation process." The commission also found the proposed transactions 'detrimental to the carrying out of the provisions of Section 11 under which the commission had issued an order in Jan 1944, directing Middle West to dispose of its interest in United by causing that company to be liquidated and dissolved. Middle West's holdings in United consist of 172,393 shares of its common stock, constituting 56% of the total outstanding. United is in the process of liquidation. (Release No. 8421).

REPUBLIC SERVICE CORP has been authorized to sell 5,800 shares of common stock of Pennsylvania Power & Light Co as being necessary or appropriate to the integration of the holding company system of which Republic is a member. These shares were the balance of the 34,156 shares of Pennsylvania common stock which Republic had acquired as the result of its sale of the Mauch Chunck Heat, Power & Light Co, Renovo Edison Light, Heat & Power Co and Renovo Heating Co to Pennsylvania Power & Light Co. (Release No. 8423).

ARKANSAS POWER & LIGHT Co has received authorization to issue and sell $7,500,000 of first mortgage bonds, due 1978. The bonds are to be sold at competitive bidding. Proceeds are to be used for construction purposes. (Release No. 8426).

ILLINOIS POWER Co has been authorized to sell additional shares of its common stock and call for redemption its outstanding 5% cumulative convertible stock of $50 par value. As of July 15, there were outstanding 239,945 shares of the Illinois preferred, which is to be called at $52.50 a share. Each preferred share is convertible into two shares of common stock. The company proposes to solicit the preferred holders for conversions. Illinois also proposes to issue and sell all unissued shares of its common stock reserved for conversion of the preferred. These shares amounted to 479,890 on July 15. The company will negotiate with underwriters for the purchase of any shares of common stock not issued on conversion of the preferred. Proceeds from such a sale would be used to redeem preferred shares not converted. (Release No. 8427).

KENTUCKY UTILITIES Co has been authorized to sell to Central Kentucky Natural Gas Co, a public utility subsidiary of Columbia Gas System, Inc, all the gas utility properties of the company located within the corporate limits of the City of Lexington for a consideration equivalent to the original cost of said property less accrued depreciation thereon on the closing date, plus the amount of net additions made by the company to the properties between Dec 31, 1947 and the date upon which the transaction is consummated and the adjusted amount of the 1948 ad valorem tax on the property. Kentucky has also been authorized to sell all the gas plants, gas transmission mains, gas distribution mains and systems of the company located in and in the vicinity of Paris and Maysville, Ky. (Release No. 8436).

NEW ENGLAND GAS & ELECTRIC ASSOCIATION has received authorization to retain and credit to a special reserve for prior years' taxes a $184,648 consolidated tax saving resulting from writeoff of unamortized debt discount and expense applicable to debentures which it retired in 1947. (Release No. 8435).

QUEENS BOROUGH GAS & ELECTRIC CO, a subsidiary of the Long Island Lighting Co, has received permission to borrow $150,000 from two commercial banks. Proceeds would be used to repay a like amount of outstanding notes held by the two banks that are due on Aug 26. The loan would be evidenced by 2¼% unsecured promissory notes of Queens Borough maturing Jan 22, 1949. (Release No. 8443).

LEHIGH VALLEY TRANSIT CO's amended plan of recapitulation has been approved. SEC stated it would apply to the Federal District Court in Philadelphia for approval and enforcement of the plan. Under the plan, Transit's outstanding $4,915,000 of refunding and improvement mortgage bonds, 5% series, due June 1, 1960, would be retired at principal amount plus accrued interest. Bondholders would have the option of receiving cash or part of their claim in shares of preferred stock of the Pennsylvania Power & Light Co, formerly a subsidiary of National Power. This would be computed on the basis of an assigned value of $112.50 for each preferred share, plus cash equal to the difference between the principal amount of the claim and its interest and $112.50. The plan previously provided that such preferred stock would be based on a fixed valuation of $112.50 a share. SEC contended that this figure was unfair because the market had declined for preferred shares after the valuation had been fixed. In addition, the plan provides for the retirement of 141 shares of Transit's 5% preferred stock, $50 par value, publicly held, by a cash payment of $90 a share. (Release No. 8445).

MEETINGS

PREVIOUSLY LISTED

American Society of Mechanical Engineers—Fall Meeting, Reed College and Heathman Hotel, Portland, Ore., September 7-9; Annual Meeting, Hotels Pennsylvania and New Yorker, New York, November 28-December 3.

Rocky Mountain Electrical League—Annual Convention, Hotel Colorado, Glenwood Springs, Colo., September 12-15.

International Brotherhood of Electrical Workers—Annual Convention, Ritz-Carlton Hotel, Atlantic City, September 13-17.

Instrument Society of America—National Instrument Conference and Exhibit, Philadelphia Convention Hall, Philadelphia, September 13-17.

Southeastern Electric Exchange—Engineering and Operations Section, Vanderbilt Hotel, Asheville, N. C., September 16-17; Accounting Section, Sir Walter Raleigh Hotel, Raleigh, N. C., October 28-29; General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., November 10-12.

Interstate Power Club of New York—Meeting, Hotel Martinique, New York, September 20.

Iowa Utilities Association—Management Conference, Fort Des Moines Hotel, Des Moines, Iowa, September 20-21.

Illuminating Engineering Society—National Conference, Statler Hotel, Boston, September 20-24.

Missouri Valley Electric Association—Personnel Administration Committee, September 21; Rate Practice Group, October 7; Power Sales Committee, October 15; all at Hotel President, Kansas City, Mo., Accounting Conference, Connor Hotel, Joplin, Mo., October 21-22; Engineering Committee, Hotel President, Kansas City, Mo., October 26; Rural Round Table, The Elms, Excelsior Springs, Mo., October 27; Sales and Rural Conference, The Elms, Excelsior Springs, Mo., October 28-29.

Pennsylvania Electric Association—Annual Meeting, William Penn Hotel, Pittsburgh, September 21-22; Transmission and Distribution Committee, Bedford Springs Hotel, Bedford, Pa., October 7-8; Prime Movers Committee, Carver House, Warren, Pa., October 28-29.

Association of Iron and Steel Engineers—Convention and Iron and Steel Exposition, Cleveland Public Auditorium, Cleveland, Ohio, September 28-October 1.

International Association of Electrical Leagues—Annual Conference, Mayflower Hotel, Washington, D. C., September 29-October 2.

Canadian Electrical Manufacturers Association—Annual General Meeting, General Brock Hotel, Niagara Falls, Ont., September 30-October 1.

American Institute of Electrical Engineers—Middle Eastern District Meeting, Statler Hotel, Washington, D. C., October 5-7; Mid-west General Meeting, Hotel Schroeder, Milwaukee, October 18-22; Southern District Meeting, Tutwiler Hotel, Birmingham, Ala., November 3-5.

Edison Electric Institute—Prime Movers Committee, William Penn Hotel, Pittsburgh, October 11-12; Transmission and Distribution Committee, New Ocean House, Swampscott, Mass., October 11-12; Electrical Equipment Committee, William Penn Hotel, Pittsburgh, October 14-15.

Indiana Electric Association—Annual Convention, French Lick Springs Hotel, French Lick, Ind., October 13-15.

Electrochemical Society—Fall Congress, Hotel Pennsylvania, New York, October 13-16.

Utility Workers Union of America—National Convention, Washington Hotel, Washington, D. C., October 15-17.

Wisconsin Utilities Association—Commercial and Technical Divisions of Electric and Gas Sections, Pfister Hotel, Milwaukee, November 1-3.

National Electronics Conference—Edgewater Beach Hotel, Chicago, November 4-6.

Public Utilities Association of the Virginias—Annual Meeting, Greenbrier Hotel, White Sulphur Springs, West Virginia, November 5-6.

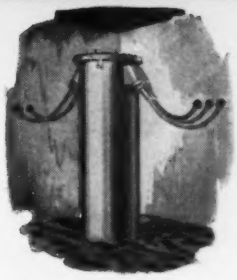
National Electrical Manufacturers Association—Annual Meeting, Hotel Traymore, Atlantic City, November 8-13.

National Farm Electrification Conference—Congress Hotel, Chicago, November 17-19.

National Exposition of Power and Mechanical Engineering—Grand Central Palace, New York, November 29-December 4.

National Electrical Contractors Association—Annual Meeting, Roney Plaza Hotel, Miami, Fla., November 30-December 3.

now **MONEL*** tanks are available on



L-M Subway Transformers

for tough corrosion applications

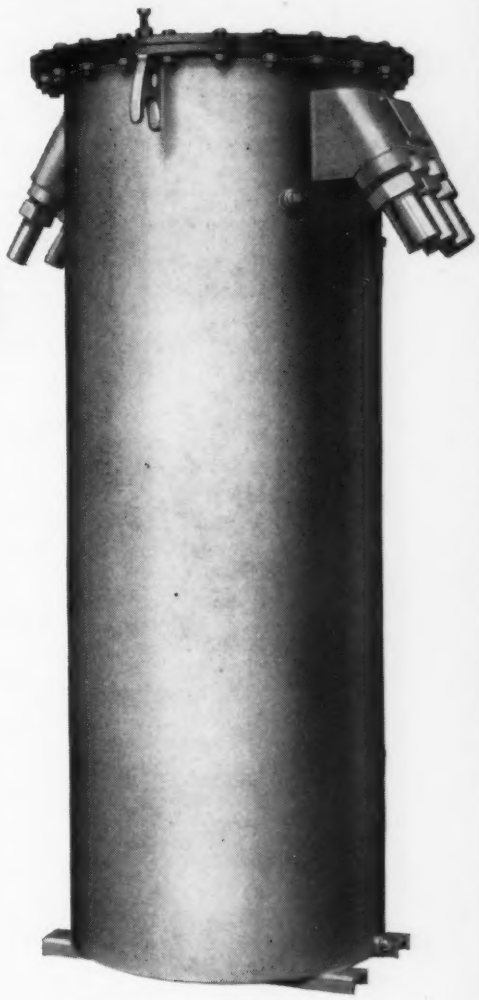
Salt water? Sewage? Corrosive Atmosphere? They won't bother the MONEL tanks now available on L-M Subway Transformers. Made in 2400 volts, 3 to 200 kva. Ratings up to 100 kva are famous L-M Round-Wound "Balanced Performance" construction.

A new Line Material development to end corrosion troubles on subway installations—the new L-M Monel* tank Subway Transformers. Monel has proved its resistance to corrosion through years of service in countless industrial and structural applications. It will solve your problems by stopping tidewater, sewage, salt air, and other corrosion.

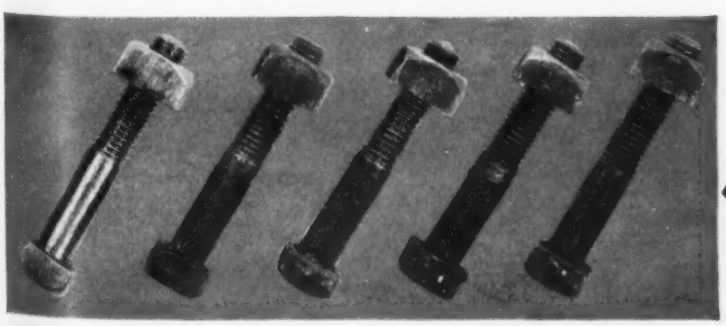
Construction assures mechanical strength, 100% watertight seal, and the L-M Round-Wound construction provides "Balanced Performance" with its many desirable characteristics.

L-M Subway Transformers are available either in Monel, or, for normal requirements, in standard steel tanks finished with heavy asphalt-base paint. Sizes, 2400 volts, 3 to 200 kva. All ratings of Monel Subway Transformers up to 100 kva are L-M Round-Wound construction. Ratings 75 to 200 kva have externally welded Monel cooling tubes for extra radiation.

*Reg. U. S. Pat. Off.



50 kva L-M Subway Transformer in Monel tank. Ratings from 75 to 200 kva have externally-welded Monel cooling tubes for extra radiation.



Monel bolts after 36 years in salt water of Kill Van Kull, which is highly polluted with chemicals and other refuse. When cleaned (bolt at far left), they were found to be in "like-new" condition, and were put back into service.

LINE MATERIAL Transformers

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • "Wired Radio" Control Equipment • Capacitors

United States Department of th
Program of Power Developme

ARIZONA

HOOVER DAM—New generating units installed June, 1951, 82,500 kw; June, 1952, 82,500 kw. Expenditures, power plant, $8,143,891, 1948-53; transmission, $2,746,599, 1948-53.

DAVIS DAM—New generating units, 45,000 kw each, Feb, May, Aug, Nov, 1950, and Feb, 1951; Expenditures, power plant, $17,850,653, 1948-53; transmission, $44,838,096, 1948-55.

GLEN CANYON—Plant construction 1951-58. Capacity 400,000 kw. Expenditures, power plant, $15,913,200, 1954-57 (after 1957, $10,608,400); transmission, $32,392,400, 1951-57 (after 1957, $17,607,600).

MARBLE CANYON—Plant construction 1955-60. Capacity, 22,000 kw. Expenditures, power plant, $409,200, 1956-57 (after 1957, $2,318,800); transmission, $1,650,000, 1955-57 (after 1957, $1,100,000).

KANAB CREEK—Plant construction 1955-65. Capacity, 1,250,000 kw. Expenditures, power plant, $4,282,200, 1955-57 (after 1957, $102,772,800); transmission, $7,396,600, 1955-57 (after 1957, $148,853,400).

BRIDGE CANYON—Plant construction 1950-56. Capacity 750,000 kw. Expenditures, power plant, $57,958,580, 1950-57 (after 1957, $2,848,420); transmission, $91,875,000, 1950-57 (after 1957, $1,875,000).

HEADGATE ROCK—Plant construction 1954-56. Capacity, 27,000 kw. Expenditures, power plant, $7,800,000, 1954-57; transmission, $3,375,000, 1954-57.

CALIFORNIA

PILOT KNOB—Plant construction 1950-52. Capacity 33,000 kw. Expenditures, power plant, $7,662,600, 1950-53; transmission, $942,400, 1950-53.

CENTRAL VALLEY—New units at Shasta plant, construction Keswick hydro and Delta steam plant, 1948-53; total new capacity 540,000 kw. Expenditures, power plants, $33,510,200, 1948-53; transmission, $25,508,800, 1948-55; switchyards, $11,806,200, 1948-51; substations, $7,772,000, 1948-55.

KINGS RIVER—Construction three new hydro plants and Fresno steam plant, acquisition and expansion Balch hydro plant, 1952-57; total new capacity 205,000 kw. Expenditures, power plants, $60,000,000, 1949-57; transmission, $9,056,000, 1949-56; substations, $4,721,000, 1950-56.

AMERICAN RIVER—Construction three hydro plants, 1952-57; total capacity, 202,000 kw. Expenditures, power plant, $58,500,000, 1950-57; transmission, $1,987,000, 1953-57; substations, $2,809,000, 1952-57.

FEATHER RIVER—Construction two hydro and Bakersfield steam plants, 1953-58; total capacity, 214,000 kw. Expenditures, power plants, $21,800,000, 1950-57 (after 1957, $1,000,000); transmission, $10,981,000, 1951-57; substations, $9,882,000, 1951-57.

TRINITY RIVER—Construction three hydro plants, 1954-55; total capacity, 170,000 kw. Expenditures, power plants, $75,000,000, 1952-57; transmission, $13,049,000, 1953-57 (after 1957, $754,000); substations, $13,547,000, 1953-57 (after 1957, $408,000).

EEL RIVER—Two hydro plants, completion 1958; total capacity, 29,800 kw. Expenditures, power plants, $13,500,000, 1955-57 (after 1957, $4,500,000); transmission, $3,160,000, 1956-57 (after 1957, $2,231,000); substations, $1,690,000, 1956-57 (after 1957, $965,000).

CARSON RIVER—Construction Carson Canyon plant, 45,000 kw, completion after 1957. Expenditures, power plant, $18,100,000, 1954-57 (after 1957, $11,900,000); transmission, $4,305,000, 1950-57; substations, $2,437,000, 1953-57 (after 1957, $498,000).

WALKER RIVER—Construction three plants, complete 1954-56; total capacity, 32,500 kw. Expenditures, power plants, $15,000,000, 1952-56; transmission, $1,610,000, 1951-57 (after 1957, $975,000); substations, $531,000, 1952-57 (after 1957, $1,234,000).

COLORADO

OURAY—Construction three plants, complete 1955; total capacity, 116,000 kw. Expenditures, power plants, $3,500,000, 1952-55; transmission, $1,125,000, 1954-55; substations, $640,000, 1954-55 (after 1957, $640,000).

ANIMAS-LA PLATA — Construction three plants, complete 1956; total capacity, 42,000 kw, 1956. Expenditures, power plants, $17,000,000, 1952-56; transmission, $1,535,000, 1954-56; substations, $525,000, 1955-56 (after 1957, $360,000).

COLLBRAN—Construction two plants, complete 1951; total capacity 7,000 kw. Expenditures, power plants, $5,000,000, 1949-51; transmission $105,000, 1950-51.

COLORADO-BIG THOMPSON—Construction seven plants, complete 1950-52; total capacity, 154,300 kw. Expenditures, power plants, $33,695,260, 1948-52; transmission and substations, $13,545,362, 1948-57 (after 1957, $484,254).

BLUE SOUTH PLATTE—Construction two plants, complete 1955-57; total capacity, 36,200 kw. Expenditures, power plants, $7,446,000, 1954-57; transmission, $960,000, 1952-53.

GUNNISON-ARKANSAS RIVER — Construction three plants, complete 1953; total capacity, 77,350 kw. Expenditures, power plants, $10,447,000, 1950-53 (after 1957, $5,760,000); substations, $6,232,200, 1950-54.

IDAHO

BOISE PROJECT—Anderson Ranch plant—Installation two units by 1950; total capacity 27,000 kw. Expenditures, power plant, $3,386,000, 1948-49.

MOUNTAIN HOME — Construction three plants, complete 1952-55; total capacity 165,000 kw. Expenditures, power plants, $15,580,000, 1950-55.

PALISADES—Plant construction, 1953. Capacity, 30,000 kw. Expenditures, power plant, $5,850,000, 1948-53.

HELL'S CANYON—Ultimate capacity of plant 1,296,000 kw; Completion four units, 432,000 kw, 1956-57. Expenditures, power plant, $27,500,000, 1953-57 (after 1957, $22,500,000).

SNAKE RIVER BASIN—Transmission —Expenditures, transmission lines, $44,815,432, 1948-57; substations $15,913,000, 1948-57.

nterior, Bureau of Reclamation

iscal Years 1948 through 1957

HOW AND WHEN THE MONEY WILL BE SPENT

Fiscal Year	Power Plant Cost By Years (Dollars)	Transmission Line Cost By Years (Dollars)	Power Capacity Added Yearly (Kilowatts)	Transmission Line Completed in Year (Miles)
Existing June 30 1947	.....	.....	2,202,400	2,579
1948	30,000,988	18,986,616	675,000	633
1949	36,089,230	38,618,140	162,500	1,396
1950	75,805,688	54,338,696	715,600	1,721
1951	103,334,051	41,811,328	703,900	1,585
1952	120,110,562	49,918,173	565,900	1,130
1953	116,116,462	54,859,801	998,100	1,727
1954	100,340,997	75,706,135	663,998	1,700
1955	100,578,270	92,139,968	914,002	2,940
1956	103,330,072	83,779,420	1,399,800	3,850
1957	70,525,480	50,603,050	593,800	3,033

MONTANA

HUNGRY HORSE DAM—Plant construction, 1953-54. Capacity, 300,000 kw. Expenditures, power plant, $23,-833,000, 1948-54.

CANYON FERRY—Plant construction, 1955. Capacity 36,000 kw. Expenditures, power plant, $4,670,000, 1949-54.

YELLOWTAIL—Plant construction, 1954. Capacity 120,000 kw. Expenditures, power plant, $10,300,000, 1948-53.

LOWER MARIAS—Plant construction complete 1952. Capacity, 1,600 kw. Expenditures, power plant, $854,000, 1951-52.

FT. PECK—Transmission only. Expenditures $13,012,408, 1948-57 (after 1957, $383,000).

NEW MEXICO

RIO GRANDE PROJECT—Caballo plant, complete 1953. Capacity 10,000 kw. Expenditure, power plant, $2,700,-000, 1950-53; transmission, $2,238,172, 1948-53; substation, $1,189,662, 1948-53.

MIDDLE RIO GRANDE—Construction two hydro plants, complete 1953; Capacity 16,000 kw; Velarde station plant, complete, 1950; Capacity 22,500 kw; Expenditure, power plants, $21,740,000, 1949-53; transmission, $1,789,500, 1949-53; substation, $1,825,600, 1949-53.

OREGON

ROGUE RIVER—Construction seven plants, complete 1952-54; capacity 89,-550 kw. Expenditures, power plants, $18,938,000, 1952-54; transmission $3,170,000, 1950-51; substation, $1,282,-000, 1950-51.

SOUTH DAKOTA

MILLER DROP—Plant construction, complete 1955. Capacity, 180,000 kw. Expenditure, power plant, $17,524,000, 1952-56.

UTAH

DIXIE PROJECT—Installation four plants, complete 1954; total capacity, 17,000 kw. Expenditures, power plants, $2,097,368, 1951-55; transmission $2,-125,000, 1951-55.

CENTRAL UTAH—Construction six plants, complete after 1957; total capacity 475,000 kw; Expenditure, power plants, $125,000,000, 1950-57 (after 1957, $10,000,000); transmission $19,-055,000, 1950-57; substations $8,112,-000, 1951-56 (after 1957, $6,433,000).

WEBER RIVER—Construction three plants, complete 1956-57; total capacity 16,400 kw. Expenditures, power plants, $9,000,000, 1953-57.

PROVO RIVER—Deer Creek Plant, complete 1951. Capacity 5,000 kw. Expenditures, power plant, $555,000, 1949-51.

WASHINGTON

GRAND COULEE—Addition 11 generator units (108,000 kw ea) complete 1952; total capacity 1,188,000 kw; Expenditures, power plant, $53,055,000, 1948-52.

YAKIMA—Construction two plants, complete 1950; Total capacity, 22,000 kw; Expenditure, power plant, $3,180,-000, 1949-51; transmission $258,281, 1948; substation $298,000, 1948-49.

WYOMING

CANYON—Plant construction, complete 1955. Capacity 70,000 kw. Expenditures, power plant, $6,238,000, 1951-55.

KENDRICK—Seminoe Plant—Expenditure, power plant, $70,000, 1950; transmission and substation, $2,739,000, 1948-53.

HEART MOUNTAIN — Construction complete 1949. Capacity 5,000 kw. Expenditure, power plant, $790,660, 1948-49; transmission, $377,230, 1948-49.

MISSOURI BASIN—Alcova Plant—Construction complete 1955. Capacity, 27,000 kw. Kortes Plant—construction complete, 1950. Capacity 36,000 kw. Expenditure, power plants, $5,997,000, 1948-1955; transmission and substation $17,290,000, 1948-57.

BOYSEN PLANT—Construction, complete 1953. Capacity 15,000 kw. Expenditure, power plant, $2,802,921, 1948-52.

it's a quick OPEN and SHUT case

Pneumatic mechanism with self-contained compressor and reservoir for high-speed breaker operation. Separate AB breaker is supplied for compressor motor.

FOR BETTER SERVICE CONTINUITY ...WITH WESTINGHOUSE GM CIRCUIT BREAKERS

You get the highest possible degree of service continuity with Westinghouse GM Oil Circuit Breakers. This is because their operation is fast—opening in 5 cycles, reclosing in 20 cycles—with almost instantaneous extinction of the arc. The result: better service continuity . . . improved system stability.

A pneumatic mechanism, pneumatically trip-free in any position and electrically trip-free in the closed position, provides fast, 5-cycle opening. And this same mechanism permits fast reclosing.

Ratings range from 69 to 230 kv, with interrupting capacity up to 5,000,000 kva. For more detailed information, write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-60677

ARE YOUR BREAKERS ADEQUATE FOR TOMORROW'S SHORT CIRCUITS?

In the next three years 15,000,000 kw will be added to American generation systems. Westinghouse can help you keep pace (in some cases) by boosting the interrupting rating of your present breakers... or in developing a planned schedule of replacement to meet today's and tomorrow's peaks.

Westinghouse
PLANTS IN 25 CITIES... OFFICES EVERYWHERE

GM CIRCUIT BREAKERS

American Gas & Electric Merges 2 Indiana Firms

The merger of the Indiana Service Corp into the Indiana & Michigan Electric Co has been completed. Both are properties of the American Gas & Electric Co.

Consolidation of the two operating properties, Philip Sporn, AG&E president, explained, represents one further step in the integration plans of his company. The consolidation, at the order of the Securities and Exchange Commission, has the effect of concentrating the operations of AG&E in its Central System. This comprises, in addition to Indiana & Michigan, the Appalachian Electric Power Co, Kentucky & West Virginia Power Co, Kingsport Utilities, Ohio Power Co, and Wheeling Electric Co.

Indiana Service operated in Fort Wayne, Delphi, and a number of smaller communities in north central and northeastern Indiana. Indiana & Michigan serves all or parts of 25 counties in central and northern Indiana and three counties in Michigan. Principal cities served are Benton Harbor and St. Joseph, Mich.; Elkhart, Marion, Muncie, and South Bend, Ind. Combined assets of the merged companies are more than $120,000,000.

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'Lighting Schoolrooms' Offers Many Suggestions

Effective assistance in promotion of school lighting by utilities can be obtained from use of a recently published pamphlet of the U. S. Office of Education. Its purpose is to inform architects, school-plant planners, and educational administrators of the problems of school lighting and to indicate methods of their solution by utilizing natural and artificial illumination.

The author, Ray L. Hamon, has stated in non-technical terms the requirements of satisfactory lighting and of presenting the various means to meet them. The publication is entitled, "Lighting Schoolrooms," Pamphlet No. 104, and is available from the U. S. Government Printing Office, Washington, D. C., at 10c. per copy.

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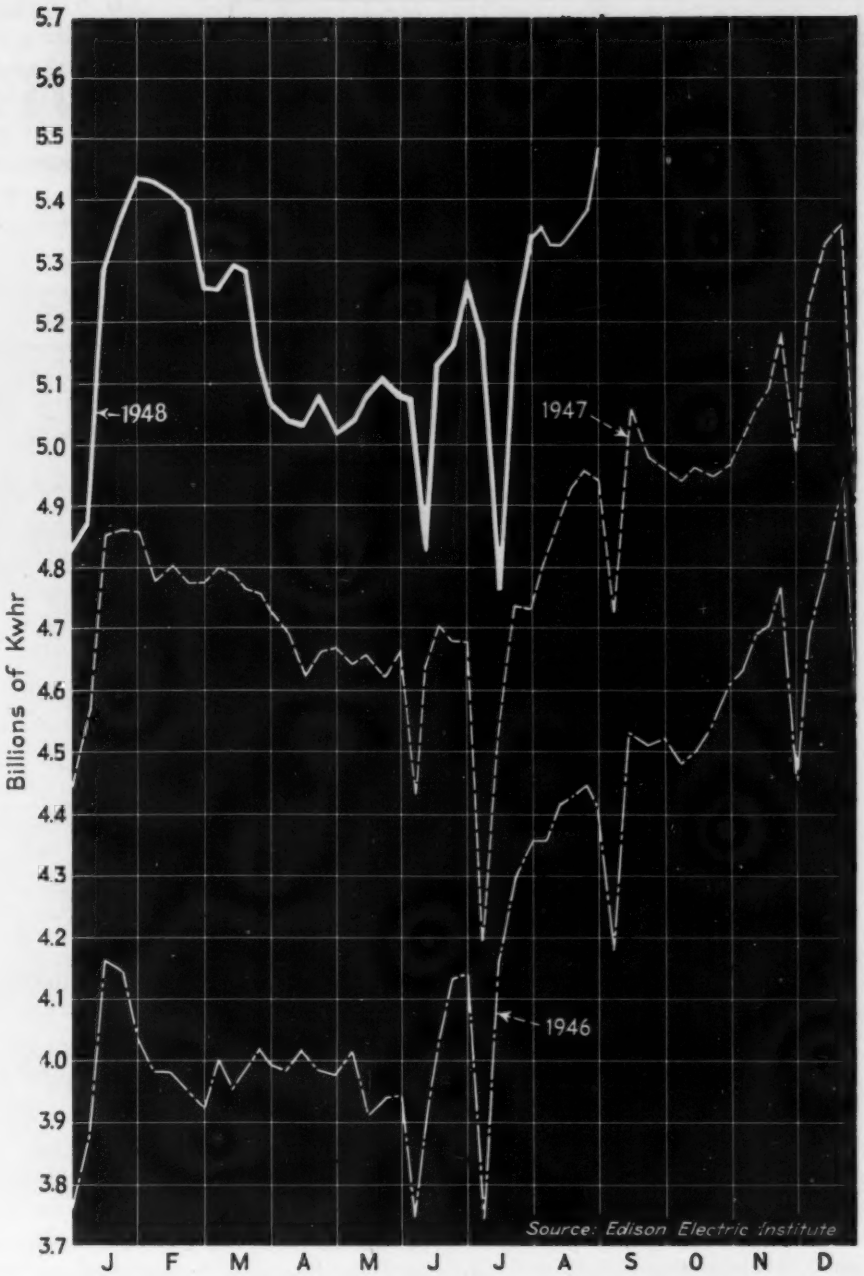
Union Wins Gallup Strike

The United Mine Workers, District 50, has been accepted as bargaining agent for 15 employees at the Gallup, N. M., municipal power plant. The union won recognition from the Gallup Power Commission after a strike.



Arput Offers Utilities New Service

Are you one of these utilities executives who are worrying about next winter's peak? Would you like to know the exact day and hour when demand will be greatest? Worry no longer. ARPUT will help you. Just send him a self-addressed, stamped envelope. Then, when the boss isn't looking, ARPUT will sneak out to a Gypsy Tea Room on 42nd Street. Here Madame Rosita reads the tea leaves after ARPUT has quaffed the gentle brew. The answer that she gives ARPUT is the one you will get. Will it be accurate? You bet it will or else ARPUT will complain to the proprietor, and Madame Rosita will go back to Macy's basement. There is no charge to utilities for this service as ARPUT slips the tea charge on his expense account. Last week the output went up, but EEI reported that.

Weekly Output, Millions Kwhr

1948	1947	1946
Aug 28 5,478	Aug 30 4,940	Aug 31 4,404
Aug 21 5,391	Aug 23 4,953	Aug 24 4,444
Aug 14 5,318	Aug 16 4,923	Aug 17 4,422
Aug 7 5,319	Aug 9 4,874	Aug 10 4,412
July 31 5,352	Aug. 2 4,806	Aug. 3 4,351
July 24 5,342	July 26 4,730	July 27 4,352
July 17 5,197	July 19 4,732	July 20 4,293
July 10 4,760	July 12 4,531	July 13 4,156

Percent Change from Previous Year

	Aug 28	Aug 21	Aug 14
New England	+ 6.2	+ 6.9	+ 6.8
Mid-Atlantic	+ 6.3	+ 4.6	+ 3.6
Central Industrial	+11.0	+ 7.8	+ 7.6
West Central	+13.6	+10.0	+ 9.5
Southern States	+13.2	+11.5	+10.1
Rocky Mountain	+11.8	+10.7	+10.2
Pacific Coast	+12.5	+11.3	+ 9.7
Total United States	+10.9	+ 8.8	+ 8.0

IN THE INDUSTRY

RICHARD N. LARKIN

SEC 4 of the Act of May 20, 1936, authorizes the Rural Electrification Administrator to ". . . make loans . . . for the purposes of financing the construction and operation of generating plants, transmission and distribution lines. . ."

The extent to which REA has been using this authority need not be guessed at. The agency's annual report for fiscal 1947 shows that its cooperative borrowers generated 7.6% of their requirements in 1941; 9.4% in 1943; 9.2% in 1945, and 10.1% in 1947. Through June 30, 1947, REA had specified 6.3% of its allocations for generating loans. Of its actual advances through the same period, 3.8% had gone for generation.

There's been a good deal of controversy about REA loans for generation. With the heat boiled out, the controversy resolves itself about thus:

1. REA has the right to make such loans. This right has infinite strategic value to the co-ops so long as dispute remains in rural electrifications.

2. Under today's technology, power costs for small, isolated plants almost always will be higher than in large, interconnected plants.

The net result is that REA would be silly to give up its right to make such loans and that it would be silly to finance many co-op plants.

Evidence that co-op generating plants may not do the best job for the farmer is contained in a *Study of Comparative Power Costs and Revenues* published by the officials of three co-ops, a municipal utilities association and a regional electric association. These groups studied the operations of eight plants owned by REA-financed generating cooperatives. The Rural Cooperative Power Association's Maple Lake, Minn., diesel plant had operated 71 months at the cut-off date of this study, and its Cambridge diesel plant at Grand Forks had operated 64 months. The Dairyland Power Cooperative's Chippewa Falls diesel station had operated 72 months; its Genoa steam plant 66 months; its Brightsdale and Rushford hydros 49 months, and its Baldwin diesel 1 month. The study's cut-off date was Dec. 31, 1946.

Conclusions reached by the seven signers of this report are rather striking. They show:

1. REA financing for these plants totals $11,285,061.

2. Capital repaid on Dec. 31, 1946, was $256,606.

3. The funds advanced for generating plant would have brought service to an additional 30,749 farms.

4. Cost of producing and transmitting power from these stations to member co-ops has been 1.52¢ per kwhr.

5. Average rate charged member co-ops has been 1.31¢ per kwhr. This rate would have to be upped 16% to break even.

6. These generating co-ops have "incurred a deficiency or direct loss of $839,080."

7. "If member co-ops had bought from utilities at rates prevailing during this period, the average charge would have been 1.16¢ per kwhr."

8. On this basis, "the ultimate loss, direct and indirect, incurred by the generating cooperatives and their members, from construction and operation of such generating systems, has been $1,425,807."

"In other words," these men conclude, "the cost to generate has exceeded the price at which energy could have been purchased by 30%."

TECHNICAL TRENDS

ARCHER E. KNOWLTON

Instrument exhibits are attracting keen attention by industrial engineers. They are quizzing about what each device can do for them. A while back the were mostly curious about "how it works".

High-frequency induction heating of irregular pieces can be more uniform if they are rotated while exposed to the field.

Contact resistance of laminated and machined joints can be reduced by interposing a few layers, preferably not more than five, of aluminum foil and applying pressure.

Magnetic fields (also electric fields) show up as dark areas in a new electron-microscope technique of the National Bureau of Standards. It affords quantitative study of small fringe patterns not amenable to other analysis.

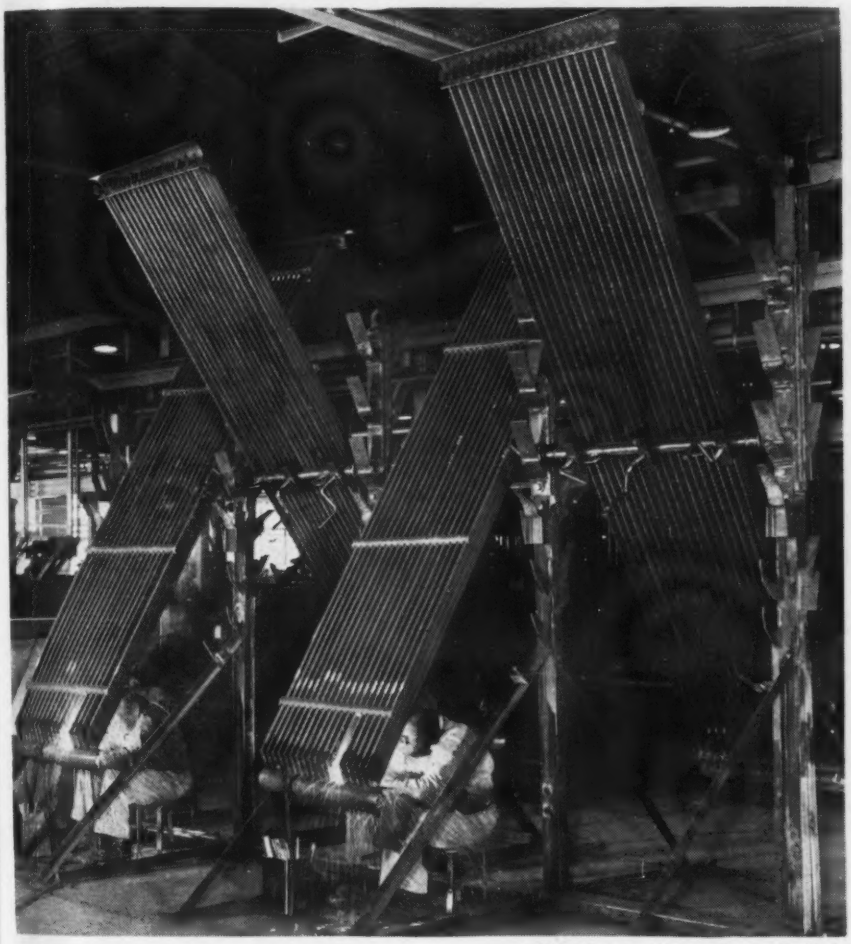
Exhauster blades of several different metals will be installed in the 16 pulverizer exhausters of one plant now being erected; the intent is to find which survives the most abuse.

Transformer impedance of lower values is possible with the new core irons and that portends better voltage regulation, particularly on inductive loads. But short-circuit currents will be correspondingly greater unless supplementary reactance is introduced somewhere, somehow.

Cleaning windings carelessly with carbon tetrachloride has lead to severe cases of uremia. The correctives are masks, gloves and ventilation. Alternative preparations of various oil companies are being used instead.

Light sources have grown so long and so large that the National Bureau of Standards has had to construct a new intergrating-sphere photometer. It is 15 feet in diameter, giving internally an area more than 200 times that of a 5-foot 100-w fluorescent.

MANUFACTURERS and MARKETS



Allis-Chalmers Manufacturing Co Photo

TRANSFORMER radiator production has been speeded at the new Columbus Plant of the Allis-Chalmers Manufacturing Co., Pittsburgh, with this unique positioning jig. After welding is done and valves are fitted, 50 radiators are tested simultaneously for leaks

Allis-Chalmers Raises Transformer Making Capacity 40% at Pittsburgh

Transformer manufacturing capacity at the Pittsburgh Works of Allis-Chalmers Manufacturing Co has been increased approximately 40%. The increase was attributed to the completion of the new Columbus Plant, a part of the Pittsburgh Works.

This new plant is the largest single item in a $2,000,000 expansion program now practically complete. The plant will be devoted exclusively to the processing of steel, previous to assembly in transformers in the other four plants located in the eight-acre area on Pittsburgh's North Side. Over 116,000 sq ft of floor area have been added since the program began in July, 1947. Plans call for the hiring of 600 employees and will bring the total to 2,900 men.

Among the equipment recently installed is a complete new battery of annealing furnaces for core steel. The battery has incorporated the most modern temperature control equipment to hold atmospheres within close tolerance. This is expected to be particularly important in the processing of the grain-oriented steels which are used in the modern design transformers.

Core steel fabrication has been speeded with a new 600-kw infrared oven and conveyor system. In 30 seconds, the core steel is coated, baked and completely dried, ready for the next operation. A whole section of the new plant is devoted to additional facilities for winding cores for the company's new wound-core distribution transformers. Another new section tests 50 radiators simultaneously, all under pressure, to check for possible oil leak.

The additional space provided by the expansion will be devoted to the manufacture of network and load center transformers, and unit substations. In addition, the plant will continue to produce small power transformers, and all the company distribution, furnace, and instrument transformers.

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Use of Krypton Improves 85-W Fluorescent Lamps

Electric lighting costs will be reduced for many industrial and commercial companies as a result of a major fluorescent lamp improvement announced independently by the lamp departments of General Electric Co and Westinghouse Electric Corp.

Consumers, who have been employing 100-w fluorescent lamps, hence forth will use about 14% less electricity to supply the same amount of light, illuminating engineers claim.

The new 85-w lamps, because of their greater efficiency, are expected to result in higher levels of illumination in new installations, and to find even wider use in industrial, commercial, and office lighting applications, than did their predecessors.

Engineers said the increased efficiency of the new lamps was a result of the development of a successful method of employing krypton, a rare gas occurring in the air to the extent of about one part in a million instead of argon as a fluorescent lamp-filling gas.

It was pointed out that lamp improvements in the past generally resulted in increased light output without change in lamp wattages. In this case, it was

explained, the choice of the new wattage rating was dictated primarily by the fact that the new lamp consumed only 85 w on existing 100 w accessory equipment, with no change in light output. If the wattage of the new lamp had been increased to 100, a complete new line of accessory equipment would have been required, and no significant increase in lamp efficiency would have resulted, engineers said.

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Howard Industries Buys Cyclohm Motor Corp

Howard Industries, Inc, Chicago, has announced the purchase of the Cyclohm Motor Corp, Long Island City, N. Y. The Cyclohm plant will function as two divisions of the parent company, Cyclohm Motor Corp division and Cyclohm Power Plants division, with an expansion in its capacity for producing not only factional motors for recording, tape pulling and facsimile work, but also portable power plants to serve as all-purpose lighting plants and battery chargers.

The new divisions have started a comprehensive program to cultivate both domestic and foreign markets.

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Manufacturers Make New Sales Assignments

Electrical manufacturing companies have recently made the following appointments to their sales staffs:

A. B. Chance Co, Centralia, Mo., has added two new sales engineers, Harry O. Donnohue and Albert B. Goodall, to its staff. Mr Donnohue will cover central and eastern Missouri, Arkansas and western Tennessee, a part of the Missouri Valley division, from headquarters in St. Louis. Mr Goodall will work with D. E. Argo, southeastern division sales manager, from headquarters in Oklahoma City. His territory includes Oklahoma and the Panhandle of Texas.

John S. Barnes Corp, Rockford, Ill., has appointed Nielsen Hydraulic Equipment, Inc, 441 Lexington Av, New York, N. Y., sales representative in the New York area. Its territory includes metropolian New York and the eastern section of the state as far west as Utica.

Pennsylvania Transformer Co, Pittsburgh, Pa., has appointed Douglas J. Munhall as sales representative in Upper New York State, including Buffalo, Syracuse, Rochester, Albany, Binghamton and surrounding territory. He recently organized the Douglas J. Munhall Co, 130 West Chippewa St, Buffalo.

De Laval Steam Turbine Co, Trenton, has appointed J. A. Greenland as district manager of the Seattle office.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Alabama—Tombigee Electric Co-operative, Guinn, 212 mi. rural power lines and sys. imprvs., **$855,000.** Lanier Eng. Co., Troy, engr.

Arizona, California and Nevada — Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., two 115,000 horsepower, 180-rpm, vertical-shaft, single-runner, Francis-type hydraulic turbines with pressure regulators for unit A3 and or unit A4, Hoover Power Plant, Boulder Canyon Proj. Spec. 2387. Plans deposit $2.45. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., chf. engr.

Idaho—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars at shipping point or f.o.b. cars at Mountain Home, 35 tone transformer transfer car, for Anderson Ranch Dam and Power Plant, Boise Proj. Spec. 2384, Plans deposit $1.00. L. N. McClellan, Denver, ch. engr.

Iowa—Clarke Electric Co-operative, Osceola, 472 mi. rural distr. lines, sys. imprvs., 45 mi. tie line, completing previously approved construction, 2-way radio communication sys., Clarke Co., **$1,165,000.**

Ia., Ames—Iowa State College, Ames, 3 story, rein.-con., brick electrical engineering bldg., $900,000. Brooks-Borg, Hubbell Bldg., Des Moines, archt.

Kansas—Central Kansas Electric Co-operative Assoc., Inc., Great Bend, 606 mi. rural distr. lines, 116 kw generating unit, sys. imprvs., substation capacity, headquarter factilities, communication equipment, Barton Co., **$1,260,000.**

Kentucky — Henderson-Union Rural Electric Co-operative Corp., Henderson, 408 mi. rural distr. lines, sys. imprvs., 133 mi. tie lines, completing previously approved construction, Henderson and Union Counties. **$1,435,000.**

Mich., Detroit—Detroit Public Lighting Comn., 174 E. Atwater St., 20,000 kw facilities Mistersky Power House, $6,-000,000. Smith, Hinchman & Gryls, 800 Marquette Bldg., archts.

Missouri—Northeast Missouri Electric Power Co-operative, F. H. Schmit, mgr., Palmyra, soon lets contract, 130 mi. 69 kv. electric transmission lines, from Louisiana, Mo., west and north to power plant, near Helton, five 69 kv. substation, Louisiana, Center, Palmyra, Lewiston, Kahoka, Proj. No. 706, Shelby Co. Stanley Engineering Co., Muscatine, engrs.

Montana — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Coram, 2 outdoor transformers, 3 station-type lightning arresters for Hungry Horse Power Plant, Hungry Horse Proj., Spec. 2379. Plans deposit $1.25. L. N. McClellan. Denver, Colo., ch. engr.

Nebraska — Bureau Reclamation, Dpt. Interior, New Customhouse, Denver, Colo., transmission lines unit, power circuit breakers, disconnecting switches for Gering Substation, Missouri Basin Proj., Spec. R7-21 (Region 7).

North Dakota — West Plains Electric Co-operative, Dickinson, 85 mi. rural distr. line, Stark Co. **$1,300,000.**

Pa., Phila.—Dpt. City Transit, City Hall Annex, Market St. Subway (High-speed Line) Extens. Contr. 264. $11,870,-000. Lawrence Costello, Dpt. Dir.

South Dakota — Sioux Valley Empire Electric Assn., Colman, 823 mi. rural distr. line, svs. imprvs., 70 mi. new tie line, completing previously approved construction, Minnehaha Co. **$1,650,000.**

Tex., Grand Prairie — Texas Electric Service Co., Grand Prairie, sub-station. **$175,000.**

Washington—Bureau Reclamation, Dpt. Interior, Building 1-A, Denver Federal Center, Denver, Colo., furnishing labor, materials and performing work for fabrication and installation of generators for units R-7, R-8 and R-9, Grand Coulee Right Power Plant., Spec. 2375. Columbia Basin Proj.; 6,900 volt switchgear, pumping unit control boards, station-service unit substations, distr. boards, battery chargers, distr. transformers for Grand Coulee Pump. Plant, Columbia Basin Proj., Spec. 2387; one alternating-current generator, with auxiliaries for Grand Coulee Power Plant. Spec. 2343. Columbia Basin Proj.

Wyoming—CIRCUIT BREAKERS, etc. —Bureau Reclamation, Dpt. Interior, Building 1-A, Denver Federal Center, Denver, Colo., one 115,000 volt, four 34,500 volt circuit breakers: three 161,000 volt and twenty-one 4,500 volt disconnecting switches for Boysen Switchyard. Spec. 2381. Missouri Basin Proj.; furnishing, del. two 34,500 volt, outdoor power circuit breakers: one 15,000 volt insulated, 375 kva 3 phase, 60 cycle, outdoor, oil-immersed, self-cooled, automatic, step-voltage regulator for Hanna sub-station. Spec. 2383. Kendrick Proj.

Low Bidders & Contracts Awarded

Nebraska—Norris Rural Public Power Dist., Beatrice, 302 mi. rural distr. lines, Norris Co., to S. J. H. Com, Humboldt, Ia., labor and materials **$443,156.** Bids 8/5.

Oregon—Bonneville Power Admin., 729 N. E. Oregon St., Portland, Aug. 20, clearing 21.3 mi. right of way for Detroit-Lyons 230 kv transmission line. No. 4299. Linn and Marion Counties from R. W. Byers, Redding, Calif., A **$302,000;** B **$325,000.**

Pa., Johnsville — Pub. Wks. Office, Phila. Naval Base, Phila., power and boiler plant, Spec. 19220 Noy 13841, to Ralph S. Herzog, 1505 Race St., Phila. **$1,567,841.**

South Carolina—Black River Electric Co-operative, Sumter, 159 mi. rural distr. lines, Sumter Co. to Sumter Builders, Inc., Sumter, labor, $61,824, materials, $159,000. Total, **$220,824.** Southern Engr. Co., 699 Spring St., N.W. Atlanta, Ga., engr.

Tennessee — Tri-County Electric Membership Corp., Lafayette, 203 mi. rural distr. lines, Macon Co. to Smith Constr. Co., 1000, 44 Ave. N. Nashville, **$265,483.** Pat M. Sullivan, 905 Stahlman Bldg., Nashville, engr.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Ind., Dyer—Mount Mercy Sanitarium, Sisters of Mercy, Dyer, sanitarium, **$1,-000,000.**

Ind., Elkhart—Bd. Co. Comrs., O. P. Martin, aud. Court House and Hospital Comm., W. R. Beardsley, chn., Elkhart, county hospital, **$1,000,000.**

N. Y., New York—Simon Bros., 292 Madison Ave., plans by George Fred Pelham, 19 W. 44 St., Zone 18, 19 story apartment at 1056-58 Fifth Ave., southeast corner of 80 St. **$2,000,000.** Weinberger & Weishoff, 33 W. 60 St., consult. engrs.

Tex., Pasadena—L. F. Corrigan, Mercantile Bank Bldg., Dallas, community center, incl. 250 room hotel, at tunnel entrance to ship channel. **$8,000,000.**

Low Bidders & Contracts Awarded

Mass., Methuen—Bon Secours Hospital, 241 Jackson St., Lawrence, hospital and convent, East and Brooks Sts., to Charles Logue Bldg. Co., 331 Newbury St., Boston. Approx. **$2,000,000.**

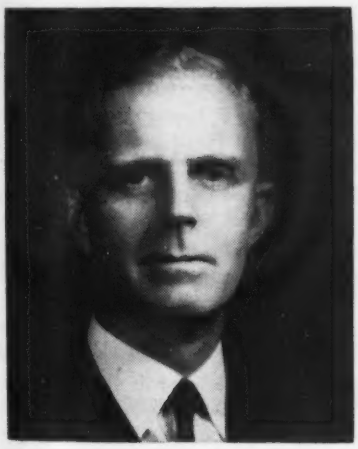
NEWS ABOUT PEOPLE

Brown Made Director Engineering, Nela Park

Willard C. Brown, executive engineer and assistant to the director of engineering, Nela Park engineering department, General Electric Co, has been appointed director of engineering of that department. Mr Brown succeeds Ward Harrison, who has retired.

Mr Brown has been associated with the G-E Lamp Department at Nela Park for 28 years, with the exception of three years in military service. During this period he became widely known in the electrical industry as a lighting engineer, analyst and executive. He is a past-president of the Illuminating Engineering Society.

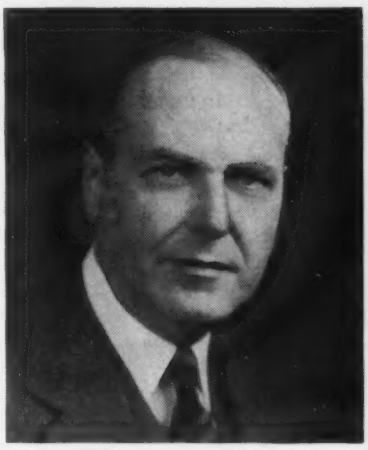
A graduate of Virginia Military Institute, MIT and Harvard University,



W. C. BROWN

Mr Brown joined G-E at Nela Park in 1920. He is the author of many bulletins and technical papers covering the lighting field and has delivered numerous talks and papers before various societies both here and abroad.

Ward Harrison, who has been director of G-E's Lamp Department since 1930, has retired after completing 40 years of service with the company. Dr Harrison has been responsible for much pioneer illuminating engineering work and has taken a prominent part in the activities of the electrical industry. He was among the first to conceive the possibilities of high-power gas-filled incandescent lamps for street lighting and it was largely through his experimental demonstration work that



W. HARRISON

in 1914 the City of Chicago was able to adopt the series incandescent lamps as the standard for street lighting.

In addition to authorship of papers covering a wide variety of illuminating engineering subjects which have appeared in the technical press. Dr Harrison is the author of a textbook entitled "Electric Lighting." He is a fellow of the American Institute of Electrical Engineers, a fellow and past-president of the Illuminating Engineering Society and a member of the British Illuminating Engineering Society.

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▶ CLARENCE E. HARTAY has been appointed superintendent of operations, eastern division, distribution department, Duquesne Light Co, to succeed F. E. Hartmann, retired. Mr. Hartay has been identified with the company since 1925, holding a variety of engineering positions. He was serving as assistant to the general superintendent of distribution at the time of his recent appointment.

▶ HERMAN B. WOLFE has been appointed operating superintendent of the Duke Power Co, Charlotte, N. C. JOHN E. CHAPMAN has been made superintendent of electrical maintenance and construction.

▶ CHARLES I. WEBB, formerly training director of the Libbey Division, Owens-Illinois Glass Co, Toledo, has been named director of employee training and education of the Toledo Edison Co.

C. V. Sorenson Made V-P, Indiana & Michigan Utility

C. V. Sorenson, formerly president of the Indiana Service Corp, Ft Wayne, has been elected vice-president and general manager of the Indiana & Michigan Electric Co, South Bend, Ind. Announcement of the merger of Indiana Service into Indiana & Michigan Electric has recently been made by Philip Sporn, president of Indiana & Michigan and of its parent organization, the American Gas & Electric Co.

Mr Sorenson's experience in the utility industry, embracing a period of 35 years, has covered all phases of the business, including operations, construction and market development. He has been

C. V. SORENSON

president of Indiana Service Corp since 1945.

He has been active in the Edison Electric Institute, the Indiana Electric Association and the American Gas Association.

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▶ O. B. FALLS has been appointed application engineer of the northwest district of the General Electric Co, with offices in Seattle. In his new position he will be concerned with problems in the economics of design of power equipment and the application of electrical apparatus in relation to the transmission and distribution of power. Mr Falls joined G-E test program in 1936, serving in Schenectady and Pittsfield. After spending three years in the transformer division, commercial section, at Pittsfield, he went to Schenectady with the

power transmission and distribution division of the central station engineering division.

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R. G. Robbins Appointed Divisional Vice-President

Hubbard & Co, Pittsburgh, Pa., has announced the appointment of Richard G. Robbins as divisional vice-president,

R. G. ROBBINS

eastern division. Mr Robbins has been sales manager of this division for several years.

Mr Robbins started with Hubbard & Co in 1923 as a general assistant to several department heads. In a few years he had worked up to the management of advertising, and soon went from that department into sales. As assistant sales manager, eastern division, his capabilities as an executive were given an excellent chance to broaden and develop and it was not long before he was made sales manager. His recent promotion to divisional vice-president, eastern division, followed.

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▶ WILLIAM C. HANDLAN, executive director of the West Virginia Industrial and Publicity Commission, Charleston, has been named director of publicity and advertising for the Monongahela Power Co, Fairmont, W. Va. Mr Handlan, who assumed his new duties on Sept 1, succeeds the late Ray W. Garvin. A former Wheeling newspaperman, he went to Charleston in 1934 to work for the state. He served as head of the information division of the State Department of Agriculture and in that capacity organized and directed the state's exhibits at the Great Lakes Exposition and the New York World's Fair. Mr Handlan has been director of the publicity commission since its organization in 1945.

OBITUARY

E. Rowland Hill

E. Rowland Hill, president of Gibbs & Hill, consulting engineers since 1924, died on Aug 25 at Orange Memorial Hospital, East Orange, N. J. He was 76 years old. A partner in Gibbs & Hill since 1912, he had designed power plants and facilities for large industrial companies and for the Armed Services. Mr Hill was chief engineer of the Westinghouse International Corp at the time of his death.

Mr. Hill obtained his early training with the Westinghouse Electric Corp, in 1895 becoming a special engineer for that organization. Recognizing his outstanding ability, the company in 1901 assigned Mr Hill to its London office, in charge of all electrical, steam, mechanical and general engineering, including the design and construction of railway stations throughout Great Britain. This work led, in 1906, to his work at the New York terminal. The work included the electrification of the Pennsylvania and Long Island Railroad tunnels. Thereafter, Mr Hill worked on electrification of lines between New York, Washington and Harrisburg, Pa.

For 25 years, Mr Hill served as president of the American Institute of Consulting Engineers.

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▶ JAMES M. SLATTERY, former Democratic U. S. Senator from Illinois and former chairman of the Illinois Commerce Commission, died suddenly on Aug 28 at his summer home in Lake Geneva. He was 70 years old. At the time of his appointment to fill a Senate vacancy in 1939, he was holding the chairmanship of the commission. Mr Slattery had been a member of the board since 1936. A native of Chicago, he was graduated from the Illinois College of Law, a profession he continued to practice until his death.

▶ CHARLES F. MACMURRAY, for a number of years connected with the Panama Power & Light Co, Panama, Canal Zone, in an executive capacity, died on August 24 at the age of 69. A native of Starkey, N. Y., and a graduate of Syracuse University, Mr MacMurray went with the Panama utility, an Electric Bond & Share subsidiary, in 1911. He served as general manager from 1922 until his retirement last year.

▶ MARK S. WILDER, identified with power development in northern New York State for many years, died on Aug 18 near Alexandria Bay, N. Y. He was 86 years old. Mr Wilder formed the Oswegatchie Light & Power Co in 1911, was also identified with the development of the Salmon River Power Co at Chasm Falls and later formed the Malone Light & Power Co to operate it.

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Clarence E. Groesbeck

Clarence E. Groesbeck, whose death was announced recently (EW, Aug 28 p 64), had been prominently identified

with the Electric Bond & Share System for a number of years. A native of Frankfort, Ill., and a graduate of the University of Michigan, Mr Groesbeck obtained his early experience with H. M. Byllesby & Co, where he spent eight years with the Pacific Coast properties of that company.

He was associated with several of Electric Bond & Share properties in the West before coming east in 1918 as a vice-president. In 1927 he was made executive vice-president and two years later was elected president. In addition to being head of Bond & Share, he also served as president of the American Power & Light Co, Electric Power & Light Corp and as an officer and director of various operating companies in the system.

Mr Groesbeck held the board chairmanship from 1933 until 1944, when he became chairman of the utility holding company's executive committee. He retired two years later, but retained his place on the board of directors and continued as a consultant.

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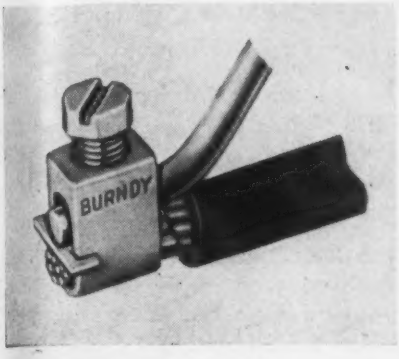
▶ EDWARD L. RAWSON, 83, who had charge of the construction of many buildings for the utilities of the then New England Gas & Electric Improvement Assn, Boston, died at Newton, Mass., Aug 19. He was a graduate of the Massachusetts Institute of Technology. The above utilities are now part of the New England Electric System.

NEW EQUIPMENT



Connector

COPPER and aluminum conductors can now be connected at service entrances by means of a new Buttin, developed by Burndy Engineering Co, Inc, 107 Bruckner Blvd, New York 54, N. Y. It is reported that only one connector type is now needed to connect the copper-aluminum combinations.

The tin-plated copper alloy body makes the Buttin suitable for both alumium and copper. A pressure bar, also tin-plated, prevents contact of dissimilar metals and distributes the screw pressure so as to minimize cold-flow of the aluminum conductors placed beneath it.

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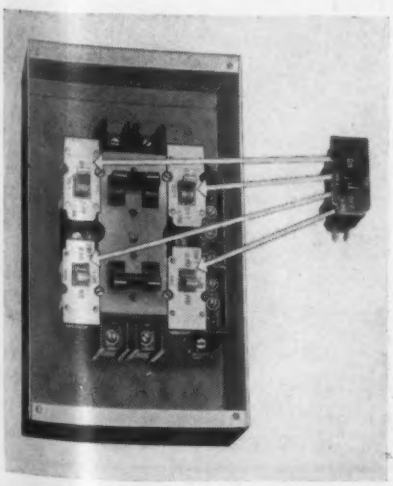
Multi-Breaker

A NEW TYPE Multi-breaker service and load center has two outstanding features. First: "Ad-on" units which permit circuits to be added or changed to satisfy new requirements. Second; high speed, thermal-magnetic (coilless) tripping. This is a development of Square D Co, 6060 Rivard St, Detroit 11, Mich.



The new type MB4 consists of a double polarity, four-pole basic unit with provisions to receive four more single-pole "Ad-on" units. Numerous circuit combinations can be made from only 33 standard basic units and three "Ad-on" units, all readily stocked. The "Ad-on" units are plugged in on main terminals.

The Multi-breaker can be used for switching of circuits as well as to provide circuit protection. Single poles are calibrated 15, 20. and 30 amp. Double-pole 40 and 50 amp circuits have individual trip.

Two-way protection is provided. A thermal element holds harmless, momentary overloads but trips if overload continues. The magnetic element trips quickly on "shorts" to localize possible damage.

Both flush and surface type enclosures are available with mains rated 70 or 100 amp.

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Wiring Test Set

AN INSPECTOR'S TEST set has been developed by the Eastern Speciality Co, Philadelphia 40, Pa. It is designed to enable one person to make a complete test of the wiring in any building without additional help.

The device is housed in a gray fiber carrying case measuring $14\frac{9}{16}$ x $7\frac{5}{16}$ x $9\frac{1}{8}$ in. high. Total weight is 13 lb. A compartment provides storage space for the flexible leads and the portable meter. Power is supplied from a standard 6v dry cell, which can be easily replaced. Operating data is given in Bulletin 42.

Cord Reel

A NEW MODEL of portable extension cord reel with lamp socket and guard has been made available by Benjamin Reel Products Inc, 10700 Broadway, Cleveland 5, Ohio. Particular applications are in garages and service stations where lighting is required underneath the car or truck. Three casters are supplied for mobility and to focus the light.

Reel model 700-18-ML is illustrated. The gray painted unit is equipped with 20 ft of SV 18/2 rubber covered cord and a male plug. The socket, bracket and guard are cadmium plated. A level-winder arrangement distributes and stacks the cord evenly.

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Voltage Stabilizer

THREE NEW UNITS have been added to General Electric Co's standard automatic voltage stabilizer line. The new units are 115v, 60-cycle designs in 15, 25 and 50-va ratings. They are stated to provide a steady output of 115v (plus or minus 1% for fixed, unity power factor loads) with input voltages ranging from 95 to 130v.

Low case height and small size make them particularly suitable for shallow depth installations.

Other features include totally insulated construction (which is necessary where isolation is required between primary and secondary circuits) and universal type leads. Detailed information is contained in bulletin GEA-3634.

ELECTRICAL BUSINESS OUTLOOK

DOLLAR VOLUME OF BUSINESS is still rising. Gross national product, the dollar value of all goods and services produced, went from an annual rate of $244 billion in the first quarter to $248 billion in the second, and should top $250 billion in the third quarter.

Electric power sales have closely followed the course of general business (chart). Lately, however, power sales have really done better than the chart indicates because business volume is inflated by price rises.

Over the next year, power sales should rise more than business volume. Dollar volume of trade in many soft goods lines and of construction may be close to a top now. But demand for power still exceeds supply. Even if business turns down in 1949, power sales may hold up. Sales stayed up better than general business in 1929–32 and 1944–46.

INDUSTRY IS USING MORE ENERGY to turn out its present flow of goods than it did for peak war production. Consumption of energy in the form of mineral fuels or water power equivalent aggregated 35,000 trillion Btu in 1947. That's 4% above the wartime peak in 1944 and 60% more than the average for 1935-39. And the rate is still going up.

Not only is industrial production higher this year, but much more fuel-consuming equipment has been installed: diesel and gasoline engines, railroad locomotives, heating equipment, and electric generators to feed electric powered machinery.

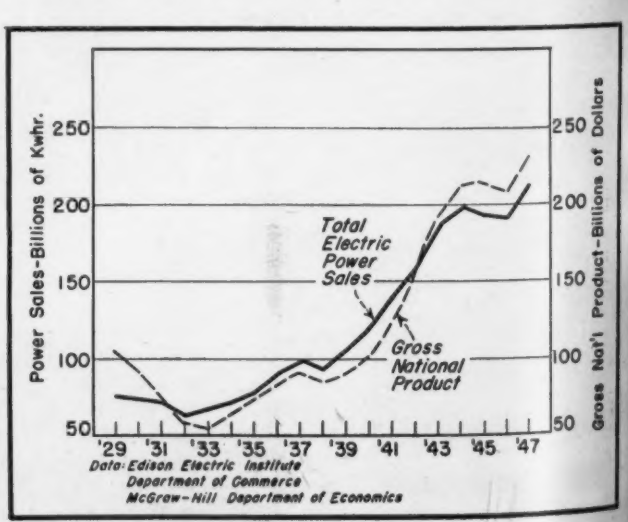
Utilities are among the fastest growing fuel users. In 1947 power companies took 15.8% of domestic coal consumption, against 13.3% in 1944 and 11.7% in 1939. Generating stations now under construction will increase that share. Utilities are also using much more oil and natural gas than in prewar years. Power companies have been able to use fuel more efficiently than railroads or manufacturers. They are producing more kilowatt hours per pound of coal equivalent than in 1939 and have about maintained the present rate since 1942. On the other hand, output per pound of coal in steel and railroading has declined since 1942 to below prewar levels. Big reason is the poor quality of coal now being mined. Despite efficient conversion into energy, utility fuel costs continue to be a problem. In May, 1948, the BLS wholesale price index for petroleum was 56% higher than in the first quarter of 1947 and 134% higher than the average for 1939. Soft coal prices rose over the same periods by 27% and 86% respectively. Meanwhile, the price of natural gas held relatively steady.

Price shifts for the various fuels mean shifts in utility consumption. In the first half of 1948, coal use was up 15.5% over 1947. Oil use increased only 2.9%. But natural gas consumption jumped 31.2%.

Cost figures show what these trends can mean to earnings. The Department of Commerce cites a representative sample of utilities using coal, whose fuel costs per thousand kwhr rose 71% from 1939 to 1947. Natural gas, unit fuel decreased 9%.

NEW UTILITY FINANCING made up 46% of all new corporate security issues in the first half of 1948. The power, gas and telephone companies sold $1,277 million of debt issues and $221 million of stocks.

The proportion of new stock issues to debt looks low, 17%. However, utilties held their own with the market as a whole. Total new stock issues only represented 19% of new offerings. And of this, a large amount was in the specially favored oil group. Moreover, new utility issues have had to compete for public favor with stocks distributed from holding company portfolios.

So far as second half financing goes, electric utilities will need a number of favorable changes, if they are to market more equity issues. Most important, is a revival of interest in the general market. The wave of enthusiasm which aided first half flotations has now petered out.

Specific help for utility common stocks could come from rate increases, which would offer prospects of better earnings. Preferred stocks could evidently be more readily sold if the SEC relaxed its requirement for competitive bidding on these issues. It is worth noting that 40% of new corporate issues in the first half were placed privately with insurance firms.